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Health Information for International Travel

1986

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL

READEX FICHE

HE20.7315:

NOTICE

Because certain countries require vaccination against cholera and yellow fever only if a traveler arrives from a country currently infected with these diseases, it is essential that up-to-date information regarding infected areas be maintained for reference. The Centers for Disease Control (CDC) publishes a biweekly Summary of Health Information for International Travel ("Blue Sheet") which lists cholera and yellow fever infected areas. Subscriptions to the "Blue Sheet" are available to health departments, physicians, travel agencies, international airlines, shipping companies, travel clinics, and other private and public agencies that advise international travelers concerning health risks they may encounter when visiting other countries. For further information contact CDC at the address on the facing page.

Health Information for International Travel 1986

JUNE 1986

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Centers for Disease Control
Center for Prevention Services
Division of Quarantine
Atlanta, Georgia 30333

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238

HHS Publication No. (CDC) 86-8280

PREFACE

One of the important responsibilities of the Centers for Disease Control is to provide up-to-date and comprehensive information on immunization requirements and recommendations for international travelers. Readers are invited to send comments and suggestions regarding this booklet to:

Center for Prevention Services
Division of Quarantine
Attention: Travelers' Health Activity
CENTERS FOR DISEASE CONTROL
Atlanta, Georgia 30333

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The assistance of the staff of the Center for Prevention Services, the Center for Infectious Diseases, and the International Health Program Office is acknowledged.

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REVISIONS

REFERENCES

References have been updated.

VACCINATION CERTIFICATE REQUIREMENTS

Vaccination Certificate Requirements for Direct Travel from the United States to other Countries has been updated.

Vaccinations Required and Information on Marlaria Risk and Prophylaxis, by country has been revised:

- Countries which require an international certificate of vaccination have been updated.
- Information on malaria risk and areas with chloroquine-resistant *P. falciparum* have been updated and specific prophylaxis regimens for both short and long-term travel have been revised.
- Countries for which CDC recommends yellow fever vaccination, even though vaccination may not be required, have been identified in this section.

The need for continuous cross-referencing with the biweekly Summary of Health Information for International Travel (also known as the "Blue Sheet") has been emphasized throughout the instructions, footnotes, and codes of this edition.

UNITED STATES PUBLIC HEALTH SERVICE RECOMMENDATIONS

Altered immunocompetence—Revisions have been made in the first paragraph and two additional paragraphs have been added.

Immunization Schedule Modifications for International Travel for Infants and Inadequately Immunized Young Children < 2 Years of Age—A new section which highlights compressed schedules for both the routine childhood immunizations and selected vaccines for young children who travel has been added.

Continued on next page

SPECIFIC RECOMMENDATIONS FOR VACCINATION AND PROPHYLAXIS

American Trypanosomiasis (Chagas' disease)—A new section has been added.

Haemophilus influenzae, type b Meningitis and Systemic Disease—A new section has been added, and schedules for immunization have been added to Tables 2 and 3.

Hepatitis A and Hepatitis B—These sections have been extensively revised.

Leishmaniasis—A new section has been added.

Malaria—The entire section has been rewritten to reflect the recent changes in prophylaxis and treatment of chloroquine-resistant *P. falciparum* (CRPF) malaria.

Rabies—This section has been rewritten and table 14 contains a revised listing of countries reporting no cases of rabies.

HEALTH HINTS FOR INTERNATIONAL TRAVELERS

Allergic Reactions to Pyrethrin Insecticides—This section has been deleted.

Travelers' Diarrhea—A new section and table on infant diarrhea and dehydration has been added.

Importation and Exportation of Human Remains—The section has been revised.

Cruise Ship Sanitation—Significant revisions have been made to this section.

This booklet is published annually by the Division of Quarantine, Center for Prevention Services, Centers for Disease Control (CDC), for use as a reference by health departments, physicians, travel agencies, international air lines, shipping companies, and other private and public agencies that advise international travelers concerning the risks they might encounter when visiting other countries. It specifies the vaccinations required by different countries and includes information on measures for travelers to take to protect their health and facilitate their travel.

The purpose of the International Health Regulations (IHR) adopted by the World Health Organization (WHO) is to ensure maximum security against the international spread of diseases with minimum interference with world traffic. In addition to the quarantinable diseases (cholera, yellow fever, and plague), covered by the IHR, there are other conditions of importance to travelers, their families, and to the community when the travelers return home.

Because some countries require vaccination against cholera and yellow fever only if a traveler arrives from a country infected with these diseases, it is essential that current information regarding infected areas be taken into consideration in determining whether vaccinations are required. The Division of Quarantine publishes a biweekly Summary of Health Information for International Travel (also known as the "Blue Sheet") to show where cholera and yellow fever are being reported. These supplemental publications are available upon request.

Official changes in individual country vaccination requirements reported by WHO are published in the "Blue Sheet" and also in the Morbidity and Mortality Weekly Report (MMWR) under "International Notes-Quarantine Measures." These changes should be entered in the Vaccination Certificate Requirements section of this booklet (pp. 15-57) to keep information on vaccination requirements current. This booklet, when kept up-to-date with changes in individual vaccination requirements, and utilized in conjunction with the "Blue Sheet" provides accurate information on vaccinations required for international travel.

Occasionally, the Division of Quarantine issues an Advisory Memorandum containing special recommendations or information about newly identified health problems associated with international travel. International travelers are advised to contact their local health department, physician, or private or public agency that advises international travelers at least 4 weeks prior to departure to obtain current health information on countries they plan to visit.

REFERENCES

☆ International Health Regulations (1969) Third Annotated Edition, World Health Organization, Geneva, 1983

☆ Vaccination Certificate Requirements and Health Advice for International Travel-Situation as of 1 January 1986. World Health Organization, Geneva, 1986

☆ Weekly Epidemiological Record-World Health Organization, Geneva, 1985-1986

☆ *Dengue* - the Americas, 1984, MMWR 35:4, 1986

☆ Agranulocytosis Associated with the Use of Amodiaquine for *Malaria* Prophylaxis, MMWR 35:10, 1986

☆ Travelers' Diarrhea, National Institutes of Health Consensus Development Conference Statement. Volume 5 Number 8

☆ Recommendations of the Public Health Service Immunization Practices Advisory Committee (ACIP):

Adult Immunization: Recommendations of the Immunization Practices Advisory Committee (ACIP), MMWR 33 (No. 1S), 1984

General Recommendations on Immunization, MMWR 32:1, 1983

Cholera Vaccine, MMWR 27:20, 1978

Diphtheria, *Tetanus*, and *Pertussis*: Guidelines for Vaccine Prophylaxis and other Preventive Measures, MMWR 34:27, 1985

Update: Prevention of *Haemophilus influenzae*, Type b Disease MMWR 35:11, 1986

Recommendations for Protection against Viral *Hepatitis*, MMWR 34:22, 1985

Prevention and Control of *Influenza*, MMWR 34:19, 1985

Measles Prevention, MMWR 31:17, 1982

Meningococcal Vaccines, MMWR 34:18, 1985

Mumps Vaccine, MMWR 31:46, 1982

Supplementary Statement of Contraindications to Receipt of *Pertussis* Vaccine, MMWR 33:13, 1984

Plague Vaccine, MMWR 31:22, 1982

Update: *Pneumococcal* Polysaccharide Vaccine Usage - United States, MMWR 33:20, 1984

Poliomyelitis Prevention, MMWR 31:3, 1982

Rabies Prevention, MMWR 33:28, 1984

Rubella Prevention, MMWR 33:22, 1984

Smallpox Vaccine, MMWR 34:23, 1985

Typhoid Vaccine, MMWR 27:27, 1978

Varicella-Zoster Immune Globulin for the Prevention of Chickenpox, MMWR 33:7, 1984

Yellow Fever Vaccine, MMWR 32:52, 1984

VACCINATION INFORMATION

VACCINATION INFORMATION

LIST OF COUNTRIES BY CONTINENT

To facilitate the use of this booklet, the following list of countries by continent is provided.

AFRICA

Algeria
Angola
Benin (formerly Dahomey)
Botswana
Burkina Faso
(formerly Upper Volta)
Burundi
Cameroon
Canary Islands (Spain)
Cape Verde
Central African Republic
Chad
Comoros
Congo
Djibouti
Egypt
Equatorial Guinea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Ivory Coast
Kenya
Lesotho
Liberia
Libyan Arab Jamahiriya
Madagascar
Madeira (Portugal)
Malawi
Mali
Mauritania
Mauritius
Morocco
Mozambique
Namibia
Niger
Nigeria
Reunion (France)
Rwanda
Saint Helena (U.K.)
Sao Tome and Principe
Senegal
Seychelles
Sierra Leone
Somalia
South Africa
Sudan
Swaziland
Tanzania, United Republic of
Togo
Tunisia
Uganda
Zaire
Zambia
Zimbabwe
(formerly Rhodesia)

THE AMERICAS

Argentina
Belize (formerly Br. Honduras)
Bermuda (U.K.)
Bolivia
Brazil
Canada
Chile
Colombia
Costa Rica
Cuba
Easter Island (Chile)
Ecuador
El Salvador
Falkland Islands (U.K.)
French Guiana
Galapagos Islands
(Ecuador)
Greenland (Denmark)
Guatemala
Guyana
Honduras
Mexico
Nicaragua
Panama
Paraguay
Peru
St. Pierre and Miquelon
(France)
Suriname
United States of America
Uruguay
Venezuela

THE CARIBBEAN

Bahamas
Turks & Caicos (U.K.)
Cayman Islands (U.K.)
Greater Antilles:
Dominican Republic,
Haiti, Jamaica,
Puerto Rico (U.S.)
Netherlands Antilles:
Aruba, Bonaire,
Curacao
Trinidad and Tobago

Leeward Islands:
Anguilla (U.K.),
Antigua and Barbuda,
Guadeloupe (France),
Montserrat (U.K.),
Netherlands Antilles:
Saba, S[illegible]t Eustatius,
Sint M[illegible]en,
Saint Cristopher (St. Kitts),
and Nevis (U.K.),
Saint Martin (Fr.)
[illegible]in [illegible]lands, British
Vi[illegible]n [illegible]ands, U.S.

Windward Islands:
Barbados, Dominica,
Grenada, Martinique (France),
Saint Lucia,
Saint Vincent and
the Grenadines

ASIA

Afghanistan
Bahrain
Bangladesh
Bhutan
Brunei Darussalam
Burma
China
Cyprus
Hong Kong (U.K.)
India
Indonesia
Iran (Islamic Republic of)
Iraq
Israel
Japan
Jordan
Kampuchea, Democratic
(formerly Cambodia)
Korea, Democratic People's
Republic of (North)
Korea, Republic of (South)
Kuwait
Lao People's Democratic
Republic
Lebanon
Macao (Portugal)
Malaysia
Maldives
Mongolia
Nepal
Oman
Pakistan
Philippines
Qatar
Ryukyu Islands (Japan)
Saudi Arabia
Singapore
Sri Lanka (formerly Ceylon)
Syrian Arab Republic
Taiwan
Thailand
Turkey
United Arab Emirates
Viet Nam
Yemen
Yemen, Democratic

EUROPE

Albania
Andorra
Austria
Azores (Portugal)
Belgium
Bulgaria
Czechoslovakia
Denmark
Faroe Islands (Denmark)
Finland
France
German Democratic Republic (East)
Germany, Federal Republic of (West)
Gibraltar (U.K.)
Greece
Hungary
Iceland
Ireland
Italy
Liechtenstein
Luxembourg
Malta
Monaco
Netherlands
Norway
Poland
Portugal
Romania
San Marino
Spain
Sweden
Switzerland
Union of Soviet Socialist Republics (Russia)
United Kingdom (with Channel Islands and Isle of Man)
Yugoslavia

OCEANIA

Australia
Christmas Island (Australia)
Cook Islands (New Zealand)
Fiji
French Polynesia (Tahiti)
Guam (U.S.)
Kiribati (formerly Gilbert Islands)
Nauru
New Caledonia (France)
New Zealand
Niue (New Zealand)
Northern Mariana Islands (U.S.)
Pacific Islands, Trust Territory of the U.S.A.
Papua New Guinea
Pitcairn (U.K.)
Samoa (formerly Western Samoa)
Samoa, American (U.S.)
Solomon Islands
Tonga
Tuvalu
Vanuatu (formerly New Hebrides)
Wake Island (U.S.)

EXEMPTION FROM VACCINATION

Age: Some countries do not require International Certificates of Vaccination for infants under 6 months or 1 year of age. Check the individual country requirements for age exemptions.

Medical grounds: If a physician thinks that a particular vaccination should not be performed for medical reasons, the traveler should be given a signed, dated statement of the reasons on the physician's letterhead stationery.

There are no other acceptable reasons for exemption from vaccination.

UNVACCINATED PERSONS

Travelers who do not have the required vaccinations upon entering a country may be subject to vaccination, medical follow-up, and/or isolation. In a few countries, unvaccinated travelers are denied entry.

TRAVEL ON MILITARY ORDERS

Since military requirements may exceed the requirements indicated in this booklet, any person who plans to travel on military orders (civilians and military personnel) should contact the nearest military medical facility to determine the requirements for the trip.

PERSONS AUTHORIZED TO VACCINATE AND TO VALIDATE INTERNATIONAL CERTIFICATES OF VACCINATION

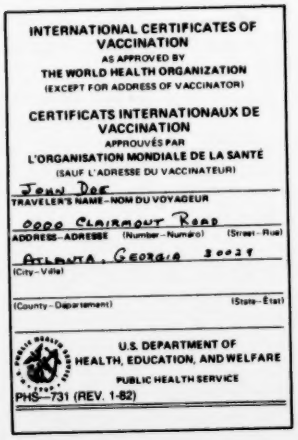
Yellow fever vaccinations must be given at official Yellow Fever Vaccination Centers as designated by respective State Health Departments, and the certificate must be validated by the center that administers the vaccine. Other vaccinations may be given under the supervision of any licensed physician. Validation of the certificate can be obtained at most city, county, and State health departments, or from vaccinating physicians who possess a "Uniform Stamp." State Health Departments are responsible for designating non-Federal Yellow Fever Vaccination Centers and issuing Uniform Stamps to be used to validate International Certificates of Vaccination. Information regarding the location and hours of Yellow Fever Vaccination Centers may be obtained by contacting local or State Health Departments. Physicians administering vaccine to travelers should emphasize that International Certificates of Vaccination must be validated to be acceptable to quarantine authorities. Failure to secure validation may cause a traveler to be revaccinated, quarantined, or denied entry.

PERSONS AUTHORIZED TO SIGN CERTIFICATES

International Certificates of Vaccination must be signed by a licensed physician or by a person designated by the physician to sign the certificates. A signature stamp is not acceptable.

MODEL OF A CORRECTLY COMPLETED CERTIFICATE

International Certificates of Vaccination must be complete in every detail; if incomplete or inaccurate, they are not valid. Revisions of this certificate dated 9-66, 9-69, 9-71, 1-74, 9-77, or 1-82 are acceptable. The 1982 revision does not contain a smallpox vaccination certificate (see p. 12).



INTERNATIONAL CERTIFICATES OF VACCINATION
AS APPROVED BY
THE WORLD HEALTH ORGANIZATION
(EXCEPT FOR ADDRESS OF VACCINATOR)

CERTIFICATS INTERNATIONAUX DE VACCINATION
APPROUVÉS PAR
L'ORGANISATION MONDIALE DE LA SANTÉ
(SAUF L'ADRESSE DU VACCINATEUR)

John Doe
TRAVELER'S NAME - NOM DU VOYAGEUR

0000 Clairmont Road
ADDRESS - ADRESSE (Number - Numéro) (Street - Rue)

Atlanta, Georgia 30329
(City - Ville)

(County - Département) (State - État)

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
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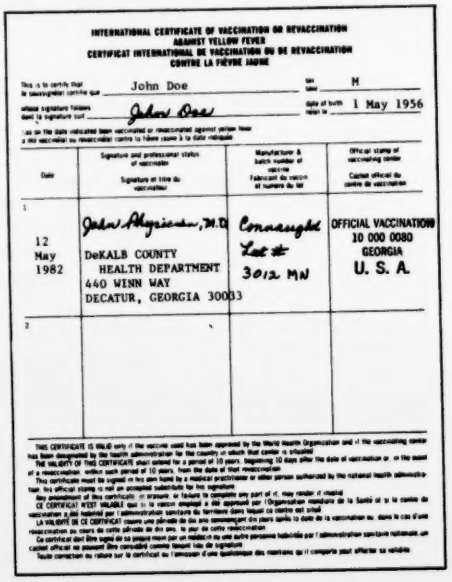

INTERNATIONAL CERTIFICATE OF VACCINATION OR REVACCINATION
AGAINST YELLOW FEVER
CERTIFICAT INTERNATIONAL DE VACCINATION OU DE REVACCINATION
CONTRE LA FIÈVRE JAUNE

This is to certify that / Le soussigné certifie que: John Doe — Sex / Sexe: M

whose signature follows / dont la signature suit: John Doe — date of birth / né le: 1 May 1956

has on the date indicated been vaccinated or revaccinated against yellow fever / a été vacciné ou revacciné contre la fièvre jaune à la date indiquée

Date	Signature and professional status of vaccinator / Signature et titre du vaccinateur	Manufacturer & batch number of vaccine / Fabricant du vaccin et numéro du lot	Official stamp of vaccinating centre / Cachet officiel du centre de vaccination
1 12 May 1982	John Physician, M.D. DeKALB COUNTY HEALTH DEPARTMENT 440 WINN WAY DECATUR, GEORGIA 30033	Connaught Lot # 3012 MN	OFFICIAL VACCINATION 10 000 0080 GEORGIA U. S. A.
2			

THIS CERTIFICATE IS VALID only if the vaccine used has been approved by the World Health Organization and if the vaccinating centre has been designated by the health administration for the country in which that centre is situated.
THE VALIDITY OF THIS CERTIFICATE shall extend for a period of 10 years, beginning 10 days after the date of vaccination or, in the case of a revaccination within such period of 10 years, from the date of that revaccination.
This certificate must be signed in his own hand by a medical practitioner or other person authorized by the national health administration. Any official stamp is not an acceptable substitute for his signature.
Any amendment of this certificate, or erasure or failure to complete any part of it, may render it invalid.
CE CERTIFICAT N'EST VALABLE que si le vaccin employé a été approuvé par l'Organisation mondiale de la Santé et si le centre de vaccination a été habilité par l'administration sanitaire du territoire dans lequel ce centre est situé.
LA VALIDITÉ DE CE CERTIFICAT couvre une période de dix ans commençant dix jours après la date de la vaccination ou, dans le cas d'une revaccination au cours de cette période de dix ans, le jour de cette revaccination.
Ce certificat doit être signé de sa propre main par un médecin ou une autre personne habilitée par l'administration sanitaire nationale. Un cachet officiel ne pourrait être considéré comme tenant lieu de signature.
Toute correction ou rature sur le certificat ou l'omission d'une quelconque des mentions qu'il comporte peut affecter sa validité.

These International Certificates of Vaccination, PHS-731 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, telephone: 202-783-3238. The stock number is 017-001-004405 and the price is $2.00 each or $14.00 per 100.

VACCINATION CERTIFICATE REQUIREMENTS

Under the International Health Regulations adopted by the World Health Organization (WHO), a country under certain conditions may require International Certificates of Vaccination against Cholera and Yellow Fever from international travelers. *Smallpox was deleted from the diseases subject to the Regulations effective January 1, 1982. Smallpox vaccination should not be given* (see p. 110). Information on vaccination requirements included in this booklet has been furnished WHO by the countries.

TABLE 1. Summary of Vaccinations That May Be Required by International Health Regulations (WHO)

Type	Doses	Comments
Cholera	1	Certificate valid for 6 months beginning 6 days after 1 injection of vaccine or on the date of revaccination if within 6 months of first injection.
Yellow Fever	1	Certificate valid for 10 years beginning 10 days after primary vaccination or on the date of revaccination if within 10 years of first injection.

Vaccination Certificate Requirements for Direct Travel from the United States to Other Countries

For *direct* travel from the United States, only the following countries require an International Certificate of Vaccination:

Cholera

Tanzania, United Republic of (if destined for Zanzibar and Pemba Islands)

Yellow fever

Angola
Benin
Burkina Faso (formerly Upper Volta)
Cameroon
Central African Republic
Congo (for stay of > 2 weeks)
French Guiana (for stay of > 2 weeks)
Gambia
Ivory Coast
Mali (for stay of > 2 weeks)
Mauritania (for stay of > 2 weeks)
Niger
Nigeria
Panama (if destined for province of Darien)
Rwanda
Sao Tome and Principe (for stay of > 2 weeks)
Senegal
Togo
Uganda

For travel to and between other countries, check the individual country requirements.

Return to the United States

No vaccinations are required to return to the United States.

HOW TO USE THIS BOOKLET TO DETERMINE VACCINATIONS REQUIRED OR RECOMMENDED

It is important to note that the Vaccinations Required section of this booklet lists the vaccinations required by the countries; the biweekly Summary of Health Information for International Travel (also known as the "Blue Sheet") lists countries that *currently* have areas infected with quarantinable diseases. *Both must be checked to determine vaccinations required.*

The following steps are suggested to determine vaccinations required:

1. List the traveler's itinerary in the sequence in which the countries will be visited. Consider the length of stay in each country. For the purpose of the International Health Regulations, the incubation periods of the quarantinable diseases are:

Cholera—5 days Plague—6 days Yellow Fever—6 days

2. Check the current biweekly "Blue Sheet" to determine if any country on the itinerary is currently infected with cholera or yellow fever. This is essential because some countries require vaccination only if a traveler arrives from an infected area.

3. Use the Vaccinations Required section of this booklet (pp. 15-57) to determine the vaccinations required by each country (consider the sequence of travel). Read the code by each disease first, then read all notes carefully. The codes are explained at the bottom of the page. If code I appears, vaccination against that disease is required of travelers arriving from ALL COUNTRIES. If code II appears, vaccination against that disease is required only of travelers ARRIVING FROM INFECTED AREAS, except as indicated in notes for individual countries. If code III appears, vaccination against that disease is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for indiviual countries. INFECTED COUNTRIES and INFECTED AREAS are reported in the biweekly Summary of Health Information for International Travel (also known as the "Blue Sheet.") READ BOTH OF THESE RESOURCES CAREFULLY, since many countries have exceptions to these codes.

Some immunizations are not required under the International Health Regulations but are recommended to protect the health of the travelers. Use the Specific Recommendations section of this booklet (pp. 61-116) to determine immunizations that are recommended for the specific itinerary. Consider the areas of the world to be visited and the nature and duration of travel.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short-term (< 3 weeks)	Long-term (> 3 weeks)
Afghanistan	All	None	A	A
Yellow Fever— II				
Albania	None			
Cholera— II > 6 mo				
Yellow Fever— II > 1 yr				
Algeria	Very limited risk in Sahara Region.	None	None	None
Yellow Fever— II > 1 yr				
Andorra	None			
No vaccinations are required.				
Angola	All	All	B	B or C
Cholera— II				
*Yellow Fever**— I > 1 yr				
Antigua and Barbuda	None			
Yellow Fever— II > 1 yr				
Argentina	Rural areas near Bolivian border[1]	None	A	A
No vaccinations are required.				
*Yellow Fever**† —				

†Risk in northeastern forest areas only

[1]Rural areas of Departments of Iruya, Oran, San Martin, Santa Victoria (northern Salta Prov.) and eastern Ledesma (Jujuy Prov.).

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Australia *Yellow Fever—* A certificate is required of travelers over 1 year of age who have been anywhere in Burkina Faso, Gambia, Nigeria, Zaire OR in the yellow fever infected parts of Bolivia, Brazil, Colombia, Educador, Peru, or Sudan. Note: Australia is not bound by the International Health Regulations.	None			
Austria No vaccinations are required.	None			
Azores (Portugal) *Yellow Fever—* II > 1 yr Except that NO certificate is required from travelers in transit at Santa Maria.	None			

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Bahamas *Yellow Fever*— II > 1 yr	None			
Bahrain *Yellow Fever*— II > 1 yr	None			
Bangladesh *Yellow Fever*— III A certificate is required ALSO from travelers arriving from or transiting: Africa: Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Congo; Equatorial Guinea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Ivory Coast; Kenya; Liberia; Malawi; Mali; Mauritania; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra Leone; Somalia; Sudan (south of 15°N); Tanzania, United Republic of; Togo; Uganda; Zaire; Zambia. *(Continued on next page)*	All areas, except no risk in city of Dhaka.	Isolated areas bordering states of Assam, Meghalaya, Tripura, and Mizoram in India and Burma.	A	A

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Bangladesh (Cont'd)				
Americas: Belize; Bolivia; Brazil; Colombia; Costa Rica; Ecuador; French Guiana; Guatemala; Guyana; Honduras; Nicaragua; Panama; Peru; Suriname; Venezuela. Caribbean: Trinidad and Tobago. Any person (including infants) arriving by air or sea without a certificate within 6 days of departure from or transit through an infected area will be isolated up to 6 days.				
Barbados	None			
Yellow Fever— III > 1 yr A certificate is required ALSO from travelers arriving from: Africa: Angola; Benin; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Congo; Djibouti; Equatorial Guinea; Ethiopia; Gabon; Gambia;				
(Continued on next page)				

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

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*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Barbados (Cont'd)				
Ghana; Guinea; Guinea-Bissau; Ivory Coast; Kenya; Liberia; Mali; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra Leone; Somalia; Sudan; Tanzania, United Republic of; Togo; Uganda; Zaire.				
Americas: Bolivia; Brazil; Colombia; Ecuador; French Guiana; Guyana; Panama; Peru; Suriname; Venezuela.				
Belgium	None			
No vaccinations are required.				
Belize (formerly Br. Honduras)	Rural areas, except no risk in Belize Dist.	None	A	A
Yellow Fever— II				
Benin (formerly Dahomey)	All	None	A	A
*Yellow Fever**— I > 1 yr				
Bermuda (U.K.)	None			
No vaccinations are required.				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Bhutan *Yellow Fever*— II	Rural areas in districts bordering India.	None	A	A
Bolivia *Yellow Fever**— II Bolivia recommends vaccination for all travelers from non-infected areas.	Rural areas only, except no risk in Oruro Dept. and Prov. of Ingavi, Los Andes, Omasuyos, and Pacajes, and Southern and Central Potosi Department.	All areas of risk	B	B or C
Botswana No vaccinations are required.	Northern part of country (North of 21°S)	None	A	A
Brazil *Yellow Fever**— II > 6 mo Brazil recommends vaccination for travel to rural areas in Acre, Amazonas, Goias, Maranhao, Mato Grosso, Mato Grosso do Sul, Para and Rondonia States and Territories of Amapa and Roraima.	Rural areas[2] of Acre, Amazonas, Goias, Maranhao, Mato Grosso, and Para States; and Territories of Amapa, Rondonia, and Roraima.	All areas of risk	B	B or C

[2]In addition, risk exists in urban areas of interior Amazon River basin.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Brunei Darussalam	None			
Yellow Fever— II > 1 yr A certificate is required ALSO from travelers transiting endemic zones within the preceding 6 days (see pp. 115-116)				
Bulgaria	None			
No vaccinations are required.				
Burkina Faso (formerly Upper Volta)	All	None	A	A
*Yellow Fever**— I > 1 yr				
Burma	Rural areas only	All areas of risk	B	B or C
Yellow Fever— II A certificate is required ALSO from nationals and residents of Burma departing for an infected area.				
Burundi	All	All	B	B or C
*Yellow Fever**— II > 1 yr				
Cameroon	All	All	B	B or C
*Yellow Fever**— I > 1 yr				
Canada	None			
No vaccinations are required.				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Cape Verde *Cholera*— II *Yellow Fever*— II > 1 yr Except that NO certificate is required from travelers arriving in Boa Vista, Maio, Sal, Santiago, and Sao Vicente.	None			
Cayman Islands (U.K.) No vaccinations are required.	None			
Central African Republic *Yellow Fever**— I > 1 yr	All	All	B	B or C
Chad *Yellow Fever**—No vaccination is required, however, Chad recommends vaccination for all travelers > 1 yr of age.	All	None	A	A
Chile No vaccinations are required.	None			

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

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> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
China *Yellow Fever*— II	Rural areas only in Anhui, Fujian, Guangdong, Guangxi Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shanxi, Shenxi, Shandong, Sichuan, Yunnan, Xingjiang and Zhejiang Provinces/ autonomous regions	Areas of risk in southern China, including Hainan Island, and areas bordering Lao People's Democratic Republic and Viet Nam.	A/B[3]	A/B or C[3]
Christmas Island (Australia) *Yellow Fever*— A certificate is required of travelers over 1 year of age who have been anywhere in Burkina Faso, Gambia, Nigeria, Zaire OR in the yellow fever infected parts of Bolivia, Brazil, Colombia, Ecuador, Peru, or Sudan. Note: Christmas Island is not bound by the International Health Regulations.	None			

[3]Travelers visiting cities and popular rural sites on usual tourist routes are generally not at risk, and chemoprophylaxis is therefore not recommended for these travelers. Travelers on special scientific, educational, or recreational visits should check whether their itineraries include evening or nighttime exposure in areas of risk, or in areas of chloroquine resistance. Travelers to most areas of risk within China should follow Regimen A; travelers to areas of chloroquine resistance should follow Regimen B or C.

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Colombia *Yellow Fever**— No vaccination required, however, Colombia recommends vaccination for travelers to the Middle Valley of the Magdalena River, eastern foothills of the Cordillera Oriental from the frontier with Ecuador to that with Venezuela, Uraba, the southeastern part of the Sierra Nevada de Santa Marta, and the gallery forest along the Guaviare River.	In general, rural areas only, except no risk in Bogota and vicinity.[4]	All areas of risk	B	B or C
Comoros No vaccinations are required.	All	All	B	B or C
Congo *Yellow Fever**— 1 > 1 yr Except that NO certificate is required from travelers who arrive from a non-infected area and stay less than 2 weeks.	All	All	B	B or C

[4]Risk exists in rural areas of Uraba (Antioquia Dept.); Bajo Cauca-Nechi (Cauca and Antioquia Dept.); Magdalena Medio, Caqueta (Caqueta Intendencia); Sarare (Arauca Intendencia); Catatumbo (Norte de Santander Dept.), Pacifico Central and Sur, Putumayo (Putumayo Intendencia); Ariari (Meta Dept.); Alto Vaupes (Vaupes Comisaria); and Amazonas.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

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> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Cook Islands (New Zealand)	None			
No vaccinations are required.				
Costa Rica	Limited risk in rural areas of Alajuela, Guanacaste, Limon, and Puntarenas Provinces.	None	A	A
No vaccinations are required.				
Cuba	None			
No vaccinations are required.				
Cyprus	None			
No vaccinations are required.				
Czechoslovakia	None			
No vaccinations are required.				
Denmark	None			
No vaccinations are required.				
Djibouti	All	None	A	A
Yellow Fever— II > 1 yr				
Dominica	None			
Yellow Fever— II > 1 yr				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Dominican Republic No vaccinations are required.	Rural areas only. Highest risk in areas bordering Haiti.[5]	None	A	A
Ecuador No vaccinations are required. *Yellow Fever**—	All areas of Esmeraldas, Guayas (including Guayaquil), Manabi, and El Oro provinces. Risk also exists in rural areas only of Los Rios, Morona, Santiago, Napo, Pastaza, Pichincha, and Zamora Chinchipe provinces[6].	All areas of risk	B	B or C

[5]Municipios of Pedernales (Pedernales Prov.), Elias Pina, El Llano, Banica (Elias Pina Prov.), Dajabon Partido (Dajabon Prov.), Pepillo Salcedo (Mote Cristi Prov.).

[6]Travelers who will only visit Quito and vicinity, the central highland tourist areas, or the Galapagos Is are not at risk and need no prophylaxis.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

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III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

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> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Egypt *Yellow Fever*— II > 1 yr A certificate is required ALSO from travelers arriving from or transiting: Africa: Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Congo; Equatorial Guinea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Ivory Coast; Kenya; Liberia; Malawi; Mali; Mauritania; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra Leone; Somalia; Sudan (south of 15°N); Tanzania, United Republic of; Togo; Uganda; Zaire; Zambia. Americas: Belize; Bolivia; Brazil; Colombia; Costa Rica; Ecuador; French Guiana; Guatemala; Guyana; Honduras; Nicaragua; Panama; Peru; Suriname; Venezuela. Caribbean: Trinidad and Tobago. *(Continued on next page)*	Rural areas of Nile Delta, El Faiyum area, the oases, and part of southern (upper) Egypt.	None	A	A

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Egypt (Cont'd)				
Air passengers in transit coming from these countries or areas without a certificate will be detained in the precincts of the airport until they resume their journey. All travelers arriving from Sudan are required to possess a vaccination certificate or a location certificate issued by a Sudanese official center stating that they have not been in that part of Sudan south of 15°N latitude within the preceding 6 days.				
El Salvador	Rural areas only.	None	A	A
Yellow Fever— II > 6 mo				
Equatorial Guinea	All	None	A	A
*Yellow Fever**— II				
Ethiopia	All, except no risk in Addis Ababa and above 2,000 meters.	None	A	A
*Yellow Fever**— II > 1 yr				
Falkland Islands (U.K.)	None			
No vaccinations are required.				

EXPLANATION OF VACCINATION CODES:

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> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Faroe Islands (Denmark)	None			
No vaccinations are required.				
Fiji	None			
Yellow Fever— II > 1 yr				
Finland	None			
No vaccinations are required.				
France	None			
No vaccinations are required.				
French Guiana	All	All	B	B or C
*Yellow Fever**— I > 1 yr Except that NO certificate is required from travelers who arrive from a non-infected area and stay less than 2 weeks.				
French Polynesia (Tahiti)	None			
Yellow Fever— II > 1 yr				
Gabon	All	All	B	B or C
*Yellow Fever**— II > 1 yr				
Gambia	All	None	A	A
*Yellow Fever**— I > 1 yr				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
German Democratic Republic (East)	None			
No vaccinations are required.				
Germany, Federal Republic of (West)	None			
No vaccinations are required.				
Ghana	All	None	A	A
*Yellow Fever**— II > 1 yr A certificate is required ALSO from travelers who within the preceding 7 days have been in the endemic zones (see pp. 115-116). Ghana recommends vaccination.				
Gibraltar (U.K.)	None			
No vaccinations are required.				
Greece	None			
Yellow Fever— II > 6 mo				
Greenland (Denmark)	None			
No vaccinations are required.				
Grenada	None			
Yellow Fever— II				

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I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

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> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Guadeloupe (France)	None			
Yellow Fever— II > 1 yr				
Guam (U.S.)	None			
No vaccinations are required.				
Guatemala	Rural areas only, except no risk in central highlands.	None	A	A
Yellow Fever— III > 1 yr				
Guinea	All	None	A	A
*Yellow Fever**— II > 1 yr				
Guinea-Bissau	All	None	A	A
*Yellow Fever**— II > 1 yr				
A certificate is required ALSO from travelers arriving from: Africa: Angola; Benin; Burkina Faso; Burundi; Cape Verde; Central African Republic; Chad; Congo; Djibouti; Equatorial Guinea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Ivory Coast; Kenya; Liberia; Madagascar; Mali; Mauritania; Mozambique; Niger;				

(Continued on next page)

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Guinea-Bissau (Cont'd)				
Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra Leone; Somalia; Tanzania, United Republic of; Togo; Uganda; Zaire; Zambia.				
Americas: Bolivia; Brazil; Colombia; Ecuador; French Guiana; Guyana; Panama; Peru; Suriname; Venezuela.				
Guyana	Rural areas in Rupununi and North West Regions.	All areas of risk	B	B or C
*Yellow Fever**— II				
A certificate is required ALSO from travelers arriving from:				
Africa: Angola; Benin; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Congo; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Ivory Coast; Kenya; Liberia; Mali; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra				

(Continued on next page)

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Guyana (Cont'd) Leone; Somalia; Tanzania, United Republic of; Togo; Uganda; Zaire. Americas: Belize; Bolivia; Brazil; Colombia; Costa Rica; Ecuador; French Guiana; Guatemala; Honduras; Nicaragua; Panama; Peru; Suriname; Venezuela.				
Haiti	All	None	A	A
Yellow Fever— II				
Honduras	Rural areas only.	None	A	A
Yellow Fever— II				
Hong Kong (U.K.)	None			
No vaccinations are required.				
Hungary	None			
No vaccinations are required.				
Iceland	None			
No vaccinations are required.				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
India	All	All	B	B or C[7]
Cholera— A certificate is required ONLY from travelers proceeding to countries which require a certificate.				
Yellow Fever— III A certificate is required ALSO from travelers arriving from or transiting: Africa: Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Congo; Equatorial Guinea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Ivory Coast; Kenya; Liberia; Malawi; Mali; Mauritania; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Sierra Leone; Somalia; Sudan (south of 15°N); Tanzania, United Republic of; Togo; Uganda; Zaire; Zambia.				

(Continued on next page)

[7]Regimen C should only be considered for those few travelers who will have prolonged exposure in the eastern areas of India.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
India (Cont'd)				
Americas: Belize; Bolivia; Brazil; Colombia; Costa Rica; Ecuador; French Guiana; Guatemala; Guyana; Honduras; Nicaragua; Panama; Peru; Suriname; Venezuela. Caribbean: Trinidad and Tobago. Any person (including infants) arriving without a certificate within 6 days of departure from or transit through an infected area will be isolated up to 6 days.				
Indonesia *Yellow Fever*— II A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116).	In general, rural areas only, except high risk in all areas of Irian Jaya. No risk in resort areas of Bali.	All areas of risk	B[8]	B or C[8]

[8] Malaria transmission in Indonesia (except for Irian Jaya) is largely confined to rural areas not visited by most travelers; most travel to rural areas of Indonesia is during daytime hours when there is minimal risk of exposure. Chemoprophylaxis is recommended only for those travelers who will have outdoor exposure during evening and nighttime hours in rural areas.

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Iran (Islamic Republic of) *Yellow Fever*— II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116).	Rural areas only in the provinces of Sistan-Baluchestan and Hormozgan, the southern parts of Fars, Kohgiluyeh-Boyar, Lorestan, and Chahar Mahal-Bakhtiani, and the north of Khuzestan.	None	A	A
Iraq *Yellow Fever*— II	All areas in northern region: Duhok, Erbil, Kirkuk, Ninawa, Sulaimaniya Prov.	None	A	A
Ireland No vaccinations are required.	None			
Israel No vaccinations are required.	None			
Italy No vaccinations are required.	None			

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Ivory Coast	All	None	A	A
*Yellow Fever**— I > 1 yr				
Jamaica	None			
Yellow Fever— II > 1 yr				
Japan	None			
No vaccinations are required.				
Jordan	None			
No vaccinations are required.				
Kampuchea, Democratic (formerly Cambodia)	All	All	B	B or C
Yellow Fever— II				
Kenya	All areas including game parks, except generally no risk in Nairobi, and areas above 2,500 meters.	All areas of risk	B	B or C
*Yellow Fever**† — II > 1 yr				
A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116).				
Kiribati (formerly Gilbert Islands)	None			
Yellow Fever— II > 1 yr				

†Risk in northwestern forest areas only

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Korea, Democratic People's Republic of (North)	None			
No vaccinations are required.				
Korea, Republic of (South)	None			
No vaccinations are required.				
Kuwait	None			
No vaccinations are required.				
Lao People's Democratic Republic	All areas, except no risk in city of Vientiane.	All areas of risk	B	B or C
Yellow Fever— II				
Lebanon	None			
Yellow Fever— II				
Lesotho	None			
Cholera— II				
Yellow Fever— II				
Liberia	All	None	A	A
*Yellow Fever**— II > 1 yr				
A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116). Liberia recommends vaccination.				

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

* CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Libyan Arab Jamahiriya *Yellow Fever*— II > 1 yr	Very limited risk in two small foci in southwest of country.	None	None	None
Liechtenstein No vaccinations are required.	None			
Luxembourg No vaccinations are required.	None			
Macao (Portugal) No vaccinations are required.	None			
Madagascar *Cholera*— Madagascar recommends vaccination for all travelers coming from or transiting infected areas. *Yellow Fever*— II Requirement ALSO includes transiting travelers.	In general, coastal areas. Limited risk in Antananarivo, Andramasina, Antsirabe, and Manjakandriana.	All areas of risk	B	B or C
Madeira (Portugal) *Yellow Fever*— II > 1 yr Except that NO certificate is required from travelers in transit at Funchal and Porto Santo.	None			
Malawi *Yellow Fever*— II	All	All	B	B or C

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Malaysia *Yellow Fever*— II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116).	In general rural areas only. Urban and coastal areas are free from malaria except in Sabah.	All areas of risk	B[9]	B or C[9]
Maldives *Yellow Fever*— II	Rural areas only, except no risk in Male Island, Kaafu Atoll, and resort areas.	None	A	A
Mali *Cholera*— II *Yellow Fever**— I Except that NO certificate is required from travelers who arrive from a non-infected area and stay less than 2 weeks.	All	None	A	A

[9]Malaria transmission in Malaysia is largely confined to rural areas not visited by most travelers; most travel to rural areas is during daytime hours when there is minimal risk of exposure. Chemoprophylaxis is recommended only for those travelers who will have outdoor exposure during evening and nighttime hours in rural areas.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Malta	None			
Cholera— II				
Yellow Fever— II > 6 mo Children under 6 months of age arriving from an infected area may be subject to isolation or surveillance.				
Martinique (France)	None			
Yellow Fever— II > 1 yr				
Mauritania	All areas, except no risk in the northern areas: Dakhlet-Nouadhibou, Inchiri, Adrar, and Tiris-Zemour.	None	A	A
Yellow Fever— I > 1 yr Except that NO certificate is required from travelers who arrive from a non-infected area and stay less than 2 weeks.				
Mauritius	Rural areas only, except no risk on Rodrigues Island.	None	A	A
Yellow Fever— II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116).				
Mexico	In general rural areas only.[10]	None	A	A
Yellow Fever— II > 6 mo	There is a limited risk in major resorts on Pacific and Gulf coasts.[11]			

[10]Risk exists in rural areas of Aguascalientes, Baja California Sur, Campeche, Chiapas, Chihuahua, Colima, Durango, Guerrero, Jalisco, Michoacan, Morelos, Nayarit, Nuevo Leon, Oaxaca, Puebla, Quintana Roo, San Luis Potosi, Sinaloa, Tabasco, Tamaulipas, Veracruz, Yucatan and Zacatecas States.

[11]Although chemoprophylaxis is not recommended for travelers to the major resort areas on the Pacific and Gulf Coasts, these travelers should be advised to use insect repellants and other personal protection measures. (See page 91.)

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Monaco No vaccinations are required.	None			
Mongolia No vaccinations are required.	None			
Montserrat (U.K.) *Yellow Fever*— II > 1 yr	None			
Morocco No vaccinations are required.	Very limited risk in rural areas of coastal provinces.	None	None	None
Mozambique *Yellow Fever*— II > 1 yr	All	All	B	B or C
Namibia *Yellow Fever*— II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zone in Africa (see p. 115). *(Continued on next page)*	All areas of Ovamboland, and Caprivi Strip.	All areas or risk	B	B or C

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Namibia (Cont'd)				
A certificate is required ALSO from travelers on unscheduled flights which use airports other than those used by scheduled airlines. Children under one year of age may be subject to surveillance. They may not proceed to Natal or to the Lowveld of the Transvaal within 6 days of leaving an infected area.				
Nauru	None			
Yellow Fever— II > 1 yr				
Nepal	Rural areas in Terai Dist. and Hill Districts below 1,200 meters. There is no risk in Katmandu.	None	A	A
Yellow Fever— II				
Netherlands	None			
No vaccinations are required.				
Netherlands Antilles	None			
Yellow Fever— II > 6 mo				
New Caledonia (France)	None			
Cholera— Vaccination is not required, however, travelers from infected areas are required to complete a form for the use of the Health Service.				
Yellow Fever— II > 1 yr				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
New Zealand No vaccinations are required.	None			
Nicaragua No vaccinations are required.	In general, rural areas only, however, risk exists in outskirts of towns of Chinandega, Leon, Granada, Managua, Nandaime, and Tipitapa.	None	A	A
Niger *Yellow Fever**— I > 1 yr Niger ALSO recommends vaccination for travelers leaving the country.	All	None	A	A
Nigeria *Cholera*— A certificate is required ONLY from travelers proceeding to countries which require a certificate. *Yellow Fever**— I > 1 yr	All	None	A	A
Niue (New Zealand) *Yellow Fever*— II > 1 yr	None			

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Northern Mariana Islands (U.S.)	None			
No vaccinations are required.				
Norway	None			
No vaccinations are required.				
Oman	All	None	A	A
Yellow Fever— II				
Pacific Islands, Trust Territory of the U.S.A.	None			
No vaccinations are required.				
Pakistan	All	Isolated reports from the Punjab.	A	A
Cholera— II				
Yellow Fever— III > 6 mo A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116). A certificate is not required of infants less than 6 months of age if the mother's certificate shows she was vaccinated prior to the birth of the child.				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Panama *Yellow Fever**— A certificate is required ONLY from travelers who are destined for the province of Darien.	Rural areas of Darien Province and Territories of Chiman and Puerto de Obaldia.	All malarious areas east of Canal Zone including San Blas Islands.	A/B[12]	A/B or C[12]
Papua New Guinea *Yellow Fever*— II > 1 yr	All	All	B	B or C
Paraguay *Yellow Fever**— II > 6 mo	In general, only rural areas bordering Brazil.	None	A	A

[12]There is no risk in the Canal Zone or in Panama City and vicinity. Travelers to rural areas west of the Canal Zone should follow Regimen A; travelers to areas east of the Canal Zone (including the San Blas Islands) should follow Regimen B or C.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

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III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Peru *Yellow Fever** — If > 6 mo	In general, all rural areas[13], except no risk in Lima and vicinity and coastal area south of Lima.	Northern provinces bordering Brazil.	A/B[14]	A/B or C[14]
Philippines *Yellow Fever* — If > 1 yr Children under one year of age arriving from infected areas are subject to isolation or surveillance.	Rural areas only, except there is no risk in Provinces of Bohol, Catanduanes, Cebu, Leyte, and Misamis Occidental.	Islands of Luzon, Basilan, Mindoro, Palawan, and Mindanao; and Sulu Archipelago.	A/B[15]	A/B or C[15]

[13]Risk exists in rural areas of Departments of Amazonas, Cajamarca (except Hualgayoc Province), La Libertad (except Otuzco, Santiago de Chuco Provinces), Lambayeque, Loreto, Piura (except Talara Province), San Martin and Tumbes; Provinces of Santa (Ancash Dept.); parts of La Convencion (Cuzco Dept.), Tayacaja (Huancavelica Dept.), Satipo (Junin Dept.).

[14]Travelers who will only visit Lima and highland tourist areas (e.g. Cuzco and Machu Picchu) are not at risk and need no prophylaxis. Travelers to most areas of risk within Peru should follow Regimen A; travelers to the northern provinces bordering Brazil who will have rural exposure during evening and nighttime hours should follow Regimen B or C.

[15]Malaria transmission in the Philippines is largely confined to rural areas not visited by most travelers; most travel to rural areas in the Philippines is during daytime hours when there is minimal risk of exposure. Chemoprophylaxis is recommended only for those travelers who will have outdoor exposure during evening and nighttime hours in rural areas. Travelers at risk should use Regimen A, unless they will be at risk in areas of chloroquine resistance in which case they should follow Regimen B or C.

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A — Routine weekly prophylaxis with chloroquine alone.

Regimen B — Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar®.

Regimen C — Routine weekly prophylaxis with chloroquine and Fansidar®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Pitcairn (U.K.)	None			
Cholera— II				
Yellow Fever— II > 1 yr				
Poland	None			
No vaccinations are required.				
Portugal	None			
Yellow Fever— A certificate is required ONLY from travelers over 1 year of age arriving from infected areas who are destined for the Azores and Madeira.				
Puerto Rico (U.S.)	None			
No vaccinations are required.				
Qatar	None			
Yellow Fever— II > 1 yr				
Reunion (France)	None			
Yellow Fever— II > 1 yr				
Romania	None			
No vaccinations are required.				

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Rwanda	All	All	B	B or C
*Yellow Fever**— I > 1 yr Except that NO certificate is required for transit travelers who do not leave the airport.				
Saint Christopher (Saint Kitts) and Nevis (U.K.)	None			
Yellow Fever— II > 1 yr				
Saint Helena (U.K.)	None			
No vaccinations are required.				
Saint Lucia	None			
Yellow Fever— II > 1 yr				
Saint Pierre & Miquelon (France)	None			
No vaccinations are required.				
Saint Vincent and the Grenadines	None			
Yellow Fever— II > 1 yr				
Samoa (formerly Western Samoa)	None			
Yellow Fever— II > 1 yr				
Samoa, American (U.S.)	None			
Yellow Fever— II > 1 yr				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
San Marino	None			
No vaccinations are required.				
Sao Tome and Principe	All	None	A	A
Yellow Fever— I > 1 yr Except that NO certificate is required from travelers who arrive from a non-infected area and stay less than 2 weeks.				
Saudi Arabia	All areas except the Eastern, Northern, and Central Provinces; the high altitude areas of Asir Province; and the urban areas of Jeddah, Mecca, Medina, and Taif.	None	A	A
Yellow Fever— III				
Senegal	All	None	A	A
*Yellow Fever**— I > 1 yr				
Seychelles	None			
No vaccinations are required.				

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Sierra Leone	All	None	A	A
*Yellow Fever** — II				
Singapore	None			
Yellow Fever — III > 1 yr A certificate is required ALSO from travelers arriving from or transiting countries in the endemic zones (see pp. 115-116).				
Solomon Islands	All	All	B	B or C
Yellow Fever — II				
Somalia	All	None	A	A
Cholera — II				
Yellow Fever — II				
South Africa	Rural areas (including game parks) in the north, east, and western low altitude areas of Transvaal and Natal coast.	Isolated reports	A	A
Yellow Fever — II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zone in Africa. (see pp. 115) A certificate is required ALSO from travelers on unscheduled flights which use airports other than those used by scheduled airlines. Children under one year of age may be subject to surveillance. They may not proceed to Natal or to the Lowveld of the Transvaal within 6 days of leaving an infected area.				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar ®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar ®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar ®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Spain No vaccinations are required.	None			
Sri Lanka (formerly Ceylon) *Yellow Fever*— II > 1 yr	In general, all areas except Colombo[16]	Isolated reports	A	A
Sudan *Cholera*— II *Yellow Fever**— II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116). A certificate may be required from travelers leaving Sudan.	All	Northern provinces	A/B[17]	A/B or C[17]
Suriname *Yellow Fever**— II	Rural areas only, except no risk in Paramaribo District and coastal areas north of 5°N.	All areas of risk	B	B or C

[16]Risk exists in districts of Amparai, Anuradhapura, Badulla (part), Batticaloa, Hambantota, Jaffna, Kandy, Kegalle, Kurungala, Mannar, Matale, Matara, Moneragala, Polonnaruwa, Puttalam, Ratnapura, Trincomalee, and Vavuniya.

[17]Most travelers to Sudan should follow Regimen A; travelers to the northern provinces should follow Regimen B or C.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Swaziland *Yellow Fever*— II	All lowland areas	Isolated reports	B	B
Sweden No vaccinations are required.	None			
Switzerland No vaccinations are required.	None			
Syrian Arab Republic *Yellow Fever*— II	Rural areas only, except no risk in Districts of Deir-es-zor, and Sweida.	None	A	A
Taiwan *Yellow Fever*— II	None			
Tanzania, United Republic of *Cholera*— A certificate is required ONLY for travelers destined for Zanzibar and Pemba Islands. *Yellow Fever**†— II > 1 yr A certificate is required ALSO from travelers arriving from countries in the endemic zones (see pp. 115-116).	All	All	B	B or C

†Risk in northwestern forest areas only

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar®. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Thailand *Yellow Fever*— II > 1 yr	Rural areas only	All areas of risk	See note[18]	See note[18]
Togo *Yellow Fever**— I > 1 yr	All	None	A	A
Tonga *Yellow Fever*— II > 1 yr	None			
Trinidad and Tobago *Yellow Fever**— II > 1 yr	None			
Tunisia *Yellow Fever*— II > 1 yr	None			
Turkey No vaccinations are required.	Cukorova/ Amikova areas and southeast Anatolia.	None	A	A

[18]Malaria transmission in Thailand is largely confined to rural areas not visited by most travelers; most travel to rural areas of Thailand is during daytime hours when there is minimal risk of exposure. Chemoprophylaxis for travelers to Thailand who will have evening and nighttime exposure is complex because of widespread resistance to both chloroquine and Fansidar® in Thailand. Regimens for these travelers must be individualized and should be made in consultation with local or state health departments or the Malaria Branch of CDC.

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

III Vaccination certificate is required of travelers arriving from a COUNTRY ANY PART OF WHICH IS INFECTED, except as indicated in notes for individual countries. INFECTED COUNTRIES are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Tuvalu	None			
Yellow Fever— II > 1 yr				
Uganda	All	All	B	B or C
*Yellow Fever**— I > 1 yr				
Union of Soviet Socialist Republics	None			
No vaccinations are required.				
United Arab Emirates	All areas, except no risk in cities of Dubai, Sharjah, Ajman, Umm al Qaiwan, and Emirate of Abu Dhabi.	None	A	A
Yellow Fever— II				
United Kingdom (with Channel Islands and the Isle of Man)	None			
No vaccinations are required.				
United States of America	None			
No vaccinations are required.				
Uruguay	None			
No vaccinations are required.				

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar *.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar *. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar *. See page 92 for a full discussion of Regimen C.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Vanuatu (formerly New Hebrides) No vaccinations are required.	All areas, except no risk on Fortuna Island.	All areas of risk	B	B or C
Venezuela No vaccinations are required. *Yellow Fever**—	In general, rural areas of Apure, Bolivar, Barinas, Merida, Tachira, and Zulia States.	All areas of risk	B	B or C
Viet Nam *Yellow Fever*— II > 1 yr	Rural areas only, except in the deltas.	All areas of risk	B	B or C
Virgin Islands, British No vaccinations are required.	None			
Virgin Islands, U.S. No vaccinations are required.	None			
Wake Island (U.S.) No vaccinations are required.	None			
Yemen *Yellow Fever*— II > 1 yr	All areas, except no risk in Sada and Hajja Prov.	None	A	A

EXPLANATION OF VACCINATION CODES:

I Vaccination certificate is required of travelers arriving from ALL COUNTRIES, except as indicated in notes for individual countries.

II Vaccination certificate is required of travelers arriving from INFECTED AREAS, except as indicated in notes for individual countries. INFECTED AREAS are reported in the biweekly *Summary of Health Information for International Travel* (also known as the "Blue Sheet").

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*CDC recommends yellow fever vaccination for travelers > 6 months of age who go outside urban areas.

> Required only of travelers of age indicated or older.

VACCINATIONS REQUIRED AND INFORMATION ON MALARIA RISK AND PROPHYLAXIS, BY COUNTRY

Vaccination Required by the Country (Read all notes carefully)	Information on Malaria Prophylaxis			
	Areas of risk within country	Areas with chloroquine resistance	Recommended regimen for travelers to areas of risk (See Codes)	
			Short term (< 3 weeks)	Long term (> 3 weeks)
Yemen, Democratic	All areas, except no risk in city of Aden or airport perimeter.	None	A	A
Yellow Fever— II > 1 yr				
Yugoslavia	None			
No vaccinations are required.				
Zaire	All	All	B	B or C
*Yellow Fever**— A certificate is required ONLY from travelers over 1 year of age coming from infected areas and arriving in or destined for that part of Zaire south of 10°S.				
Typhoid— Zaire recommends vaccination.				
Zambia	All	All	B	B or C
*Yellow Fever**†— II > 1 yr				
Zimbabwe (formerly Rhodesia)	All areas, except no risk in city of Harare.	All areas of risk	B	B or C
Yellow Fever— II				

†Risk in northwestern forest areas only

MALARIA PROPHYLAXIS REGIMEN CODES (see pp 92-96 for details of regimens including dosages, precautions, contraindications, and alternatives):

Regimen A—Routine weekly prophylaxis with chloroquine alone.

Regimen B—Routine weekly prophylaxis with chloroquine alone PLUS carry presumptive treatment dose of Fansidar®.

Regimen C—Routine weekly prophylaxis with chloroquine and Fansidar®. The potential benefit of this regimen must be weighed against the risk of possible serious or fatal adverse reactions to the weekly use of Fansidar®. See page 92 for a full discussion of Regimen C.

UNITED STATES PUBLIC HEALTH SERVICE RECOMMENDATIONS

UNITED STATES PUBLIC HEALTH SERVICE RECOMMENDATIONS

INTRODUCTION

Recommendations for individuals engaging in international travel apply primarily to vaccinations and prophylactic measures not required by countries but generally advisable for U.S. travelers planning to spend time in areas of the world where diseases such as measles, poliomyelitis, typhoid fever, viral hepatitis, and malaria occur either in endemic form or epidemic form and, therefore, pose a threat to their health. In addition, some countries require an International Certificate of Vaccination against cholera and/or yellow fever as a condition for entry. The majority of U.S. international travelers probably do not need any additional immunizations or prophylaxis, provided their routine immunization status is up-to-date according to the standards of the Public Health Service Immunization Practices Advisory Committee (ACIP).

The extent to which advisory statements can be made specific for each country and each disease is limited by the lack of reliable data. Although data on the occurrence of many of these diseases are published regularly by WHO, these figures represent only a small percentage of the total number of cases that actually occur—in fact, many countries do not report these diseases at all. Furthermore, communicable diseases are not well reported by practicing physicians, and in some countries where the number of physicians is inadequate, many cases never come to medical attention. For these reasons, any recommendations must be interpreted with care.

In general, the risk of acquiring illness when engaging in international travel depends on the areas of the world to be visited—travelers in developing countries are at greater risk than those traveling in developed areas. In most developed countries, Canada, Australia, New Zealand, Japan, and the continent of Europe, the risk to the general health of the traveler will be no greater than that incurred throughout the United States; however, there may be a higher risk of measles, rubella, and mumps. In many developed countries such as the Federal Republic of Germany, Ireland, Italy, Spain, Sweden, and the United Kingdom, pertussis immunization is not as widely practiced as in the United States, and the risk of acquiring pertussis is greater. In the countries in Africa, Asia, South America, Central America, Mexico, the South Pacific, Middle East, and Far East, living conditions and standards of sanitation and hygiene vary considerably, and immunization coverage levels may be low. There the risk of acquiring disease also can vary greatly. Travelers visiting primarily tourist areas on itineraries that do not include travel or visits in rural areas have less risk of exposure to food or water of questionable quality. Travelers who visit smaller cities off the usual tourist routes and those who spend time in small villages or rural areas for extended periods or who expect to have extended contact with children are at greater risk of acquiring infectious diseases, because of exposure to water and food of uncertain quality and closer contact with local residents who may harbor the organisms that cause such diseases. Consequently, the added protection of booster or additional doses of certain vaccines and prophylaxis is recommended for these persons.

More detailed comments can be found under Specific Recommendations for Vaccination and Prophylaxis.

GENERAL RECOMMENDATIONS ON VACCINATION AND PROPHYLAXIS

The Immunization Practices Advisory Committee (ACIP) meets periodically and makes recommendations to the Public Health Service. Benefits and risks are associated with the use of all products—no vaccine is completely effective or completely safe. The recommendations represent a balancing of scientific evidence of benefits and risks in order to achieve optimal levels of protection against infectious or communicable diseases. The recommendations include information on general immunization issues and on the use of specific vaccines. When these recommendations are revised, they are published in the MMWR.

Vaccinations against diphtheria, tetanus, pertussis, measles, mumps, rubella, and poliomyelitis are routinely administered in the United States, usually in childhood. Whether or not international travel is planned, if persons do not have a history of adequate protection against these diseases, immunizations appropriate to their age and previous immunization status should be obtained. Vaccination against *Haemophilus influenzae* type b disease is recommended for children 2 years of age. Text and tables 2-13 and 15-18 present recommendations for use of routine vaccines and toxoids which may be indicated for travelers, as well as vaccine-specific information including the number of doses, dose intervals, boosters, side effects, precautions and contraindications. For specific vaccines and toxoids, further details on background, side effects, adverse reactions, precautions, and contraindications are available in the appropriate ACIP statements.

AGE AT WHICH IMMUNOBIOLOGICS ARE ADMINISTERED

Factors which influence recommendations concerning the age at which vaccine is administered include age-specific risks of disease and complications, ability of individuals of a given age to respond to the vaccine(s), and potential interference with the immune response by passively transferred maternal antibody. In general, vaccines are recommended for the youngest age group at risk with an acceptable level of antibody response following vaccine administration.

The routine immunization recommendations and schedules for infants and children in the United States (Table 2 and 3) do not provide specific guidelines for infants and young children who will travel internationally before the age when specific vaccines and toxoids are recommended routinely or during the period before primary series have been completed. The section titled **IMMUNIZATION SCHEDULE MODIFICATIONS FOR INTERNATIONAL TRAVEL FOR INFANTS AND INADEQUATELY IMMUNIZED YOUNG CHILDREN < 2 YEARS OF AGE** (pp 71) provides revised recommendations and schedules for active immunization and, when appropriate, passive immunization.

TABLE 2. Recommended Schedule For Active Immunization of Normal Infants and Children

Recommended age*	Vaccine(s)†	Comments
2 months	DTP-1§,OPV-1¶	Can be given earlier in areas of high endemicity
4 months	DTP-2, OPV-2	6-weeks-2-months interval desired between OPV doses to avoid interference
6 months	DTP-3	An additional dose of OPV at this time is optional for use in areas with a high risk of polio exposure
15 months**	MMR††	
18 months	DTP-4, OPV-3	Completion of primary series
24 months	HbPV§§	
4-6 years¶¶	DTP-5, OPV-4	Preferably at or before school entry
14-16 years	Td***	Repeat every 10 years throughout life

*These recommended ages should not be construed as absolute, i.e., 2 months can be 6-10 weeks, etc.

†For all products used, consult manufacturer's package enclosure for instructions for storage, handling, and administration. Immunobiologics prepared by different manufacturers may vary, and those of the same manufacturer may change from time to time. This package insert should be followed for a specific product.

§DTP-Diphtheria and tetanus toxoids and pertussis vaccine.

¶OPV-Oral, attenuated poliovirus vaccine contains poliovirus types 1, 2, and 3.

**Simultaneous administration of MMR, DTP, and OPV is appropriate for patients whose compliance with medical care recommendations cannot be assured.

††MMR-Live measles, mumps, and rubella viruses in a combined vaccine (see text for discussion of single vaccines versus combination).

§§HbPV-Haemophilus b polysaccharide vaccine. HbPV should be given routinely at 24 months of age or as soon as possible thereafter. Vaccination of children 3-4 years of age should be based on the risk of disease. HbPV is not recommended generally for persons 5 years of age and older.

¶¶Up to the seventh birthday

***Td-Adult tetanus toxoid and diphtheria toxoid in combination, which contains the same dose of tetanus toxoid as DTP or DT and a reduced dose of diphtheria toxoid.

TABLE 3. Recommended Immunization Schedule For Infants and Children Up To 7th Birthday Not Immunized At The Recommended Time In Early Infancy*

Timing	Vaccine(s)	Comments
First visit 2-14 months of age ≥ 15 months of age ≥ 24 months of age	 DTP-1†, OPV-1§ DPT-1, OPV-1, MMR** DPT-1, OPV-1, MMR, HbPV††	DTP, OPV, and MMR and, possibly, HbPV may be administered simultaneously if appropriate for age
2 months after first DTP, OPV	DTP-2, OPV-2	
2 months after second DTP	DTP-3	An additional dose of OPV may be given for travel to areas with a high risk of polio exposure
6-12 months after third DTP	DTP-4, OPV-3	
Preschool§§ (4-6 years)	DTP-5, OPV-4	Preferably at or before school entry
14-16 years	Td***	Repeat every 10 years throughout life

*If initiated in the first year of life, give DTP-1, 2, and 3, OPV-1 and 2 according to this schedule; give MMR when the child becomes 15 months old.

†DTP-Diphtheria and tetanus toxoids with pertussis vaccine, DTP may be used up to the seventh birthday.

§OPV-Oral, attenuated poliovirus vaccine contains poliovirus types 1, 2, and 3.

**MMR-Live measles, mumps, and rubella viruses in a combined vaccine.

††HbPV-Haemophilus b polysaccharide vaccine. HbPV should be given routinely at 24 months of age or as soon as possible thereafter. Vaccination of childern 3-4 years of age should be based on the risk of disease. HbPV is not recommended generally for persons 5 years of age and older. For details on simultaneous administration with antigens other than DTP see text *Different Antigens* pg. 66.

§§The preschool dose is not necessary if the fourth dose of DTP and third dose of OPV are administered after the fourth birthday.

***Td-Adult tetanus toxoid and diphtheria toxoid in combination, which contains the same dose of tetanus toxoid as DTP or DT and a reduced dose of diphtheria toxoid.

TABLE 4. Recommended Immunization Schedule For Persons 7 Years of Age or Older

Timing	Vaccine(s)	Comments
First visit	Td-1*, OPV-1†, and MMR§	OPV not routinely administered to those ≥ 18 years old
2 months after first Td, OPV	Td-2, OPV-2	
6-12 months after second Td, OPV	Td-3, OPV-3	OPV-3 may be given as soon as 6 weeks after OPV-2
10 years after Td-3	Td	Repeat every 10 years throughout life

*Td-Tetanus and diphtheria toxoids (adult type) are used after the seventh birthday. The DTP doses given to children under 7 who remain incompletely immunized at age 7 or older should be counted as prior exposure to tetanus and diphtheria toxoids (e.g., a child who previously received 2 doses of DTP only needs 1 dose of Td to complete a primary series).

†OPV-Oral, attenuated poliovirus vaccine contains poliovirus types 1, 2, and 3. When polio vaccine is to be given to individuals 18 years or older, IPV is preferred.

§MMR-Live measles, mumps, and rubella viruses in a combined vaccine. Persons born before 1957 can generally be considered immune to measles and mumps and need not be immunized. Rubella vaccine may be given to persons of any age, particularly to women of childbearing age. MMR may be used since administration of vaccine to persons already immune is not deleterious.

SPACING OF IMMUNOBIOLOGICS

Multiple doses of same antigen

Some products require more than 1 dose for full protection. Doses given at less than recommended intervals may lessen the antibody response. It is unnecessary to restart an interrupted series of a vaccine or toxoid or to add extra doses. However, it is necessary to give periodic booster doses of some preparations to maintain protection.

Different antigens

Experimental evidence and extensive clinical experience have strengthened the scientific basis for giving certain vaccines at the same time. Most of the widely used antigens can safely and effectively be given simultaneously. This knowledge is particularly helpful for international travelers for whom exposure to several infectious diseases may be imminent.

In general, inactivated vaccines can be administered simultaneously at separate sites. It should be noted, however, that when vaccines commonly associated with local or systemic side effects (such as cholera, typhoid, and plague vaccines) are given simultaneously, the side effects theoretically might be accentuated. When practical, these vaccines should be given on separate occasions.

Field observations indicate that administration on the same day of the most widely used live-virus vaccines has not resulted in impaired antibody response or increased rates of adverse reactions. Observation of children indicates that antibody responses to trivalent oral polio vaccine (OPV) given simultaneously with licensed combination measles-mumps-rubella (MMR) vaccine are comparable to those obtained when the same vaccines are given at separate visits. It is reasonable to expect equivalent immunologic responses when other licensed combination or live, attentuated-virus vaccines or their component antigens are given simultaneously with OPV. There are theoretical concerns and data showing that the immune response to a live virus vaccine might be impaired if the vaccine is administered within the month following another live virus vaccine. When feasible, live virus vaccines not administered on the same day should be given at least 1 month apart.

No data indicate that simultaneous administration of individual measles, mumps, or rubella antigens at different sites yields different results from administration of the combined vaccines in a single site.

Data on the response to simultaneous administration of diphtheria and tetanus toxoids and pertussis vaccine (DTP), OPV, and MMR vaccine indicate that the protective response is satisfactory and adverse reactions do not increase. Therefore, simultaneous administration of all these antigens is recommended when individuals require multiple antigens and there is doubt that the recipient will return to receive further doses of vaccine. Children 15 months of age or older who have received fewer than the recommended number of DTP and OPV doses for their age fall into this category (Table 3). Studies on the simultaneous administration of *Haemophilus* b polysaccharide vaccine (HbPV) and DTP indicate the practice to be safe and the protective response satisfactory. Although direct studies on the simultaneous administration of HbPV and OPV and/or MMR are not available, it is reasonable to assume that the protective response would be satisfactory and that adverse reactions would not increase.

An inactivated vaccine and a live, attenuated-virus vaccine can be administered simultaneously at separate sites, with the precautions that apply to the individual vaccines. Unless there are time constraints, cholera and yellow fever vaccines should be administered at an interval of > 3 weeks. If the vaccines cannot be administered at least 3 weeks apart then they should be given simultaneously.

Immune globulin (IG)*

Inactivated products can be given at the time of, or any time after IG use. With live, attentuated vaccines, passively acquired antibody may interfere with replication of vaccine virus and thus with the antibody response of the patient. Live vaccines (e.g., MMR) should be given at least 14 days before IG and should not be given for at least 6 weeks, but preferably 3 months, after the administration of IG. Preliminary data, however, indicate that IG does not interfere with the immune response either to OPV or to yellow fever vaccine.

If IG administration becomes necessary after a live vaccine has been given, interference may occur. In general, vaccine virus replication and stimulation of immunity will occur within 7 to 10 days. Thus, if the interval between vaccine and IG is less than 14 days, vaccine should be repeated about 3 months after IG was given, unless serologic testing indicates that antibodies have been produced; if the interval was longer, vaccine need not be readministered. If administration of IG becomes necessary because of imminent exposure to disease, live virus vaccines may be administered simultaneously with IG, with the recognition that vaccine-induced immunity may be compromised. The vaccine should be administered in a separate site from IG inoculation. Vaccination should be repeated about 3 months later, unless serologic testing indicates antibodies have been produced.

HYPERSENSITIVITY TO VACCINE COMPONENTS

Vaccine antigens produced in systems or with substrates containing allergenic substances, e.g., antigens derived from growing microorganisms in embryonated chicken eggs, may cause hypersensitivity reactions. These reactions may include anaphylaxis when the final vaccine contains a substantial amount of the allergen. Yellow fever vaccine is such an antigen. Vaccines with such characteristics should not be given to persons with known hypersensitivity to components of the substrates.

Live virus vaccines prepared by growing viruses in cell cultures are essentially devoid of potentially allergenic substances related to host tissue. On very rare occasions, hypersensitivity reactions to measles vaccine have been reported in persons with anaphylactic hypersensitivity to eggs. Measles vaccine, however, can be given safely to egg-allergic individuals provided the allergies are not manifested by anaphylactic symptoms. Since mumps and influenza vaccines are grown in similar cell cultures, the same precautions apply.

Screening persons by history of ability to eat eggs without adverse effects is a reasonable way to identify those possibly at risk from receiving measles, mumps, influenza and yellow fever vaccines. Individuals with anaphylactic hypersensitivity to eggs (hives, swelling of the mouth and throat, difficulty breathing, hypotension, or shock)** should not be given influenza or yellow fever vaccines. They can be vaccinated against measles and mumps only with extreme caution. One investiga-

*Formerly called immune serum globulin and immunoglobulin.

**Any of these signs or symptoms constitutes a systemic anaphylactic response.

tor has developed special protocols for administering measles and mumps vaccine to such individuals (J. Pediatr. 1983;102:196-199).

Rubella vaccine is grown in human diploid cell culture and can be safely given, regardless of a history of allergy to eggs or egg proteins.

Bacterial vaccines, such as cholera, DTP, plague, and typhoid, are frequently associated with local or systemic adverse effects; these common reactions do not appear to be allergic.

Some vaccines contain preservatives (e.g., thimerosal, a mercurial) or trace amounts of antibiotics (e.g., neomycin) to which patients may be hypersensitive. Those administering vaccines should carefully review the information provided in the vaccine package insert before deciding whether the rare patients with known hypersensitivity to such preservatives or antibiotics should be given the vaccine(s). No currently recommended vaccine contains penicillin or its derivatives.

Some vaccines (e.g., MMR vaccine or its individual component vaccines) contain trace amounts of neomycin. This amount is less than would usually be used for the skin test to determine hypersensitivity. Persons who have experienced anaphylactic reactions to neomycin should not receive these vaccines. Most often, neomycin allergy is a contact dermatitis, a manifestation of a delayed-type (cell-mediated) immune response rather than anaphylaxis. In such individuals, the adverse reaction, if any, to neomycin in the vaccinees would be an erythematous, pruritic papule at 48-96 hours. A history of delayed-type reactions to neomycin is not a contraindication to receiving these vaccines.

ALTERED IMMUNOCOMPETENCE

Virus replication after administration of live, attenuated-virus vaccines may be potentiated in patients with immune deficiency diseases, and by the suppressed immune responses that occur with leukemia, lymphoma, generalized malignancy, acquired immune deficiency syndrome (AIDS), or therapy with corticosteroids, alkylating agents, antimetabolites, or radiation. Patients with such conditions should not be given live, attenuated-virus vaccines. Immunodeficiency diseases and immunosuppressive therapies also may reduce the immune responses to inactivated vaccines and toxoids.

Because of the possibility of familial immunodeficiency, live, attenuated-virus vaccines should not be given to a member of a household in which there is a family history of congenital or hereditary immunodeficiency until the immune competence of the potential recipient is known. OPV should not be given to a member of a household in which there is a family history of immunodeficiency or immunosuppression, whether acquired or hereditary, until the immune status of the recipient and the other family members is known. Individuals residing in the household of an immunocompromised individual should not receive OPV because vaccine viruses are excreted by the recipient of the vaccine and may be communicable to other persons.

Patients with leukemia in remission whose chemotherapy has been terminated for at least 3 months may receive live virus vaccines for infections to which they are still suspectible, i.e. have neither had the disease nor the vaccine before developing leukemia. The exact interval after discontinuing immunosuppresion that coincides with the ability to respond to the individual vaccine is not known. Experts vary in their judgments from 3 months to 1 year.

Although specific studies are lacking on the immune response of immunosuppressed persons to inactivated vaccines, if immunosuppressive therapy will be discontinued shortly, it would be reasonable to defer immunization until the patient has been off therapy 1 month; otherwise the patient should be vaccinated while still on therapy.

Short-term (less than 2 weeks) corticosteroid therapy, topical steroid therapy, e.g. nasal or skin, and intraarticular, bursal or tendon injections with corticosteroids should not be immunosuppressive and do not necessarily contraindicate vaccination with live-virus vaccines. Vaccination should be avoided if systemic immunosuppressive levels are achieved by topical application.

VACCINATION OF PERSONS WITH FEBRILE ILLNESSES

Minor illnesses, such as mild upper-respiratory infections, should not postpone vaccine administration. However, immunization of persons with moderate to severe febrile illnesses generally should be deferred until they have recovered to avoid superimposing adverse effects from the vaccine on the underlying illness or mistakenly identifying a manifestation of the underlying illness as a result of the vaccine.

VACCINATION DURING PREGNANCY

Live vaccines

On the grounds of a theoretical risk to the developing fetus, live, attentuated virus vaccines generally are not given to pregnant women or to those likely to become pregnant within 3 months after receiving vaccine(s). With some of these vaccines—particularly rubella, measles, and mumps—pregnancy is a contraindication. Both yellow fever vaccine and OPV can be given to pregnant women at substantial risk of exposure to natural infection. When vaccine is to be given during pregnancy, waiting until the second or third trimester to minimize any concern over teratogenicity is a reasonable precaution. If a pregnant woman receives a live, attenuated virus vaccine, there is not necessarily any real risk to the fetus. In particular, although there are theoretical risks in giving rubella vaccine during pregnancy, data collected in a registry of women vaccinated during pregnancy or within 3 months of conception, demonstrates that for rubella vaccine the risk, if any, of teratogenicity from live rubella vaccine is negligible. There has been no evidence of congenital rubella syndrome in infants born to susceptible mothers who received rubella vaccine during pregnancy.

Since persons given measles, mumps, or rubella vaccine viruses do not transmit them, these vaccines may be administered with safety to children of pregnant women. Although live polio virus is shed by children recently immunized with OPV (particularly following the first dose), this vaccine can also be administered to children of pregnant women. Polio immunization of children should not be delayed because of pregnancy in close adult contacts. Experience to date has not revealed any risks from polio vaccine virus to the fetus.

TABLE 5. Vaccination during pregnancy

Vaccine		Indications for vaccination during pregnancy
Live virus vaccines		
Measles Mumps Rubella	Live-attenuated	Contraindicated.
Yellow fever	Live-attenuated	Contraindicated except if exposure is unavoidable.
Poliomyelitis	Trivalent live-attenuated (OPV)	Persons at substantial risk of exposure may receive live-attenuated virus vaccine.
Inactivated virus vaccines		
Hepatitis B	Plasma derived, purified hepatitis B surface antigen	Pregnancy is not a contraindication.
Influenza	Inactivated type A and type B virus vaccines	Usually recommended only for patients with serious underlying disease. It is prudent to avoid vaccination during the first trimester. Consult health authorities for current recommendations.
Poliomylelitis	Killed virus (IPV)	OPV not IPV, is indicated when immediate protection of pregnant females is needed.
Rabies	Killed virus Rabies IG	Substantial risk of exposure.
Inactivated bacterial vaccines		
Cholera Typhoid	Killed bacterial	Should reflect actual risks of disease and probable benefits of vaccine.
Plague	Killed bacterial	Selective vaccination of exposed persons.
Meningococcal	Polysaccharide	Only in unusual outbreak situations.
Pneumococcal	Polysaccharide	Only for high-risk persons.
Toxoids		
Tetanus-diphtheria (Td)	Combined tetanus-diphtheria toxoids, adult formulation	Lack of primary series, or no booster within past 10 years.
Immune globulins, pooled or hyperimmune	Immune globulin or specific globulin preparations	Exposure or anticipated unavoidable exposure to measles, hepatitis A, hepatitis B, rabies, or tetanus.

Inactivated virus vaccines, bacterial vaccines, toxoids, immune globulin

In general, there is no convincing evidence of risk to the fetus from immunization of pregnant women using inactivated virus vaccines, bacterial vaccines, or toxoids. Tetanus and diphtheria toxoids (Td) should be given to inadequately immunized pregnant women because it affords protection against neonatal tetanus. It is prudent, however, to wait until the second or third trimester. If polio vaccine is needed for immediate protection of a pregnant woman because of increased risk, OPV not IPV, should be given. There is no risk to the fetus from passive immunization of pregnant women with IG.

IMMUNIZATION SCHEDULE MODIFICATIONS FOR INTERNATIONAL TRAVEL FOR INFANTS AND INADEQUATELY IMMUNIZED YOUNG CHILDREN < 2 YEARS OF AGE

Routine Childhood Vaccine Preventable Diseases (measles, mumps, rubella, polio, diphtheria, tetanus and pertussis)

Diphtheria and tetanus toxoid and pertussis vaccine

Diphtheria is an endemic disease in many developing countries. Tetanus is ubiquitous world wide. Pertussis is common in developing countries and in other countries where routine immunization against pertussis is not practiced widely. Because the risk of contracting pertussis in other countries and of diphtheria in developing countries is higher than in the United States, children who will be leaving the United States should be as well immunized as is possible before departing. Optimum protection against diphtheria, tetanus and pertussis in the first year of life is achieved with 3 doses of DTP, the first administered at 6-8 weeks of age and the next two at 4-8 week intervals, as is generally the practice in the United States. A fourth dose, generally 6-12 months after the third dose, maintains protection. Infants traveling to areas where diphtheria and/or pertussis are endemic or epidemic preferably should have received 3 doses, the first dose no sooner than 6 weeks of age and the next 2 doses at intervals of no less than 4 weeks. Two doses of DTP received at intervals of at least 4 weeks may provide some protection particularly against diphtheria and tetanus, while a single dose is of little protective benefit. Parents who are traveling with young infants should be informed that infants who have not received 3 doses of DTP are at greater risk of contracting pertussis than children who have been adequately protected. Infants and other children less than 7 years of age who at the time of travel have received less than 3 doses of DTP and who will remain for extended periods in areas of increased risk of exposure to pertussis and/or diphtheria should complete their remaining doses at 4 week intervals.

For infants and children traveling internationally or remaining in areas of increased risk of exposure, reducing the interval between the third and fourth doses of the primary series to 6 months may be considered.

Measles vaccine

Measles is an endemic disease in many developing countries and in other countries where measles immunization is not routinely practiced. Because the risk of contracting measles in many countries is far greater than that in the United States, children should be as well protected as possible before departing the United States.

Measles vaccine, preferably in combination with rubella and mumps vaccines i.e. MMR vaccine, should be administered to all children 15 months of age and older.

The age at vaccination should be lowered for those children traveling to areas where measles is endemic or epidemic. Children 12-14 months of age may receive MMR before their departure, without need for revaccination. Children 6-11 months of age should receive a dose of single measles antigen vaccine (without rubella or mumps antigens) before departure and must be revaccinated with MMR vaccine. While the optimal age at revaccination is 15 months, the age at revaccination may as low as 12 months if the child remains in a high risk area. In this situation, further doses of measles vaccine are not indicated. Since virtually all infants less than 6 months of age will be protected by maternally derived antibodies, no additional means to provide protection against measles is generally necessary.

Mumps and rubella vaccine(s)

The risk of serious disease from infection with either mumps or rubella in infants is so small that there is no justification to administer mumps or rubella vaccine below the age of 12 months.

Polio vaccine

When time permits, children traveling to endemic areas should receive at least 3 doses of OPV at intervals of at least 6-8 weeks. Children who have received 3 prior doses of OPV should receive a fourth dose if at least six weeks have elapsed since the third dose. In the United States, the Immunization Practices Advisory Committee (ACIP) recommends that a primary series of 3 doses of oral poliovirus vaccine (OPV) be given beginning preferably at 6 weeks of age and at intervals of at least 6 weeks (the third dose is typically given several months after the second). However, in polio endemic areas, the Expanded Programme of Immunizations of the World Health Organization recommends that a dose of OPV be given in the newborn period, e.g., at birth or before 6 weeks of age, with 3 additional doses (the primary series) given subsequently at 6, 10, and 14 weeks of age. While ideally the ACIP recommendations on age and intervals between doses of OPV should be followed, if travel to an endemic country will occur before a child is 6 weeks of age, a dose of OPV should be given prior to travel. A dose of vaccine administered before 6 weeks of age should not be counted as part of the standard 3 dose primary series. If the child remains in an endemic country, the child should receive the first dose of the standard 3 dose primary series no sooner than 4 weeks after the newborn period dose and the remaining 2 doses of the primary series at 4 week intervals. If the child has left the endemic area, the first dose of the primary series should be given 6 weeks after the newborn period dose, the second dose 6 weeks after the first dose and the third dose of the primary series 8-12 months after the second as is generally the practice in the United States.

Children traveling to an endemic country who have received a first or second dose of the primary series of OPV should receive prior to departure their second and/or third doses of OPV 4 weeks after their prior dose(s). Children with less than a primary series at the time of departure to an endemic area and who remain in an endemic area should complete the 3 dose primary series within the endemic area with doses at 4 week intervals.

Other Vaccines and Immune Globulin

Cholera vaccine

The risk of cholera to U.S. travelers of any age is so low that it is questionable whether vaccination is of benefit. No data are available concerning the efficacy or side effects of cholera vaccine in children less than 6 months of age. Cholera vaccine is not recommended for children less than 6 months of age. Breast-feeding is protective against cholera; careful preparation of formula and food from safe water and foodstuffs should protect nonbreast-fed infants. If a child less than 6 months of age is to travel to areas requiring cholera immunization, a medical waiver should be obtained prior to travel. For older infants and children traveling to countries that require vaccination, a single dose of vaccine is sufficient to satisfy International Health Regulations.

Typhoid vaccine

Typhoid vaccination is not required for international travel. No data are available concerning the efficacy or side effects of typhoid vaccine in infants, although the vaccine is probably immunogenic in this age group. Breast-feeding is likely to be protective against typhoid; careful preparation of formula and food from safe water and foodstuffs should protect nonbreast-fed infants. Typhoid vaccine is recommended for older children traveling to areas where there is a recognized risk of exposure to *Salmonella typhi* (see Typhoid fever for information on dosage and route of administration, p.111).

Yellow fever vaccine

Because immunization of infants against yellow fever carries an increased risk of encephalitis, the requirement for vaccination should be considered on an individual basis. Although the risk has not been clearly defined, 14 of 17 reported case of encephalitis were seen in infants vaccinated under 4 months of age. The current recommendations of the ACIP indicate that yellow fever vaccine may be administered to children 6 months of age and older if they are traveling to or living in an endemic zone (MMWR 32:52, 1984). However, the recent recommendation of a World Health Organization advisory group is for routine immunization of children one year of age or older, unless there is a significant risk of naturally acquired infection, e.g. travel or residence in an area of ongoing epidemic transmission. Therefore, it seems prudent to immunize children 1 year of age or older who are traveling to countries which require yellow fever immunization (see Vaccinations Required And Information On Malaria Risk And Prophylaxis, By Country, pp 15-57); and to immunize children 6-11 months of age who are traveling to areas of probable or recognized current yellow fever transmission (see countries with asterisks in Vaccinations Required And Information On Malaria Risk And Prophylaxis, By Country, pp 15-57). Information on yellow fever endemicity is also available from Division of Vector-Borne Viral Diseases, CDC, Fort Collins, Colorado, Tel: 303-221-6400. Children under 6 months of age should *not* be vaccinated, and vaccination of children 6-11 months of age should be avoided unless they are at risk of acquiring yellow fever. Travel by such infants should be delayed or restricted to an urban center in the endemic zone where the virus activity is absent. In those cases

where yellow fever immunization is required by the host country, but the infant will not be at risk, a medical waiver should be obtained prior to travel.

Hepatitis B vaccine

Infants and young children traveling to areas with highly endemic hepatitis B infection may be at risk if they are directly exposed to blood from the local population. Circumstances in which disease transmission could occur include receipt of blood transfusions not screened for HBsAg, exposure to unsterilized needles (or other medical/dental equipment) in local health facilities, or continuous close contact with local children who have open skin lesions (impetigo, scabies, scratched insect bites). Such exposures are most likely to occur if the child is living for long periods in smaller cities or rural areas and in close contact with the local population. Children who expect to live in an HBV endemic area for six or more months and who are expected to have the above exposures should receive the HB vaccine, in 3 doses of 10 μg each, at the same schedule as recommended for adults (p.88).

Immune globulin for Hepatitis A

Infants and children traveling to developing countries are at increased risk of acquiring hepatitis A if their travel is outside usual tourist routes, if they will be eating food or drinking water in settings of questionable sanitation, or if they will be in contact with local young children in settings of poor sanitation (see pp.86). Although hepatitis is rarely severe in children under age 5 years, infected children efficiently transmit infection to older children and adults. Immune globulin (IG) should be given to infants and children as prophylaxis in the same schedule as recommended for adults (Table 8).

See pp 96 and 139 for discussion of malaria and diarrhea in infants.

BREAST-FEEDING

Inactivated or killed vaccines do not multiply within the body; therefore, they pose no special problems for mothers who are breastfeeding or for their infants.

Although live vaccines do multiply within the mother's body, most have not been demonstrated to be excreted in breast milk. In the few circumstances where there could be transmission from breast milk (e.g., rubella), the virus usually does not infect the infant and if it does the infection is well tolerated.

Yellow fever virus is not excreted in breast milk following vaccination, and there is no contraindication for vaccinating breast-feeding mothers with yellow fever vaccine.

ADVERSE EVENTS FOLLOWING IMMUNIZATION: REPORTING

Modern vaccines are extremely safe and effective, but not completely so. Adverse events following immunization have been reported with all vaccines. These range from frequent, minor, local reactions to extremely rare, severe, systemic illness such as paralysis associated with OPV. Information on side effects and adverse events following specific vaccines and toxoids are discussed in detail in each ACIP statement. All temporally associated events severe enough to require the recipient to seek medical attention should be evaluated and reported in detail to local or State health officials and to the vaccine manufacturer.

COMMUNICABLE DISEASES IN DISASTERS

Natural disasters can contribute to the transmission of some diseases; however, unless the causative agent is in the environment, transmission cannot take place. Studies of flood and earthquake disasters have shown that communicable disease outbreaks rarely result. Natural disasters often disrupt water supplies and sewerage systems. Epidemic typhoid has been conspicuously absent following natural disasters in developing countries where typhoid is endemic. It takes several weeks for typhoid antibodies to develop and even then immunization provides only moderate protection. Floods pose no additional risk of typhoid.

Of greatest importance in preventing enteric disease transmission when water and sewage systems have been disrupted is to assure that water and food supplies are safe to consume. When contamination is suspected, water should be boiled or appropriately disinfected (see pp. 132-133).

SPECIFIC RECOMMENDATIONS FOR VACCINATION AND PROPHYLAXIS

SPECIFIC RECOMMENDATIONS FOR VACCINATION AND PROPHYLAXIS

■ AFRICAN SLEEPING SICKNESS (Trypanosomiasis)

African trypanosomiasis is confined to tropical Africa between 15° North and 20° South latitude. It is transmitted by the bite of the tsetse fly. Chronic trypanosomiasis (*Trypanosoma brucei gambiense*) may not cause symptoms until months to years following travel to an endemic area. Although the risk to international travelers is extremely low, persons traveling to game parks and sparsely inhabited areas should take precautions. Avoidance of areas known to be heavily infested by tsetse flies is the best means of prevention. Use of insect repellents and long-sleeved clothing may afford some protection.

■ AMEBIASIS

Amebiasis occurs worldwide with a higher prevalence in areas of poor sanitation. It is a diarrheal disease caused by the protozoan parasite *Entamoeba histolytica*. Cysts (infectious stage of the parasite) are passed in human stools. Infection is acquired directly by the fecal-oral route or indirectly by ingesting cysts in fecally contaminated food or water. Travelers to endemic areas are advised to follow the precautions included under "Health Hints for the Traveler" (pp. 132-134).

■ AMERICAN TRYPANOSOMIASIS (Chagas' Disease)

Chagas disease occurs throughout much of the Western hemisphere from Central America to Argentina. It is usually transmitted by contact with feces of an infected reduviid bug; transmission may also occur through blood transfusion, transplacentally, or via breast milk. Reduviid bugs infest poorly constructed buildings particularly those with cracks or crevices in the walls and roof. Avoidance of overnight stays in dwellings infested by the reduviid bug vector eliminates the risk of acquiring the infection. Alternate control measures include insecticide spraying of infested houses and the use of bed netting.

■ CHOLERA

Cholera is an acute intestinal infection caused by *Vibrio cholerae* O-group 1. The infection is often mild and self-limited or subclinical. Persons with severe cases respond dramatically to simple fluid- and electrolyte-replacement therapy. Infection is acquired primarily by ingesting contaminated water or food; person-to-person transmission is rare.

Most countries do not require vaccination. Vaccination is not recommended routinely for travelers to countries that do not require an International Certificate of Vaccination against cholera as a condition for entry. The risk of cholera to U. S. travelers is so low that it is questionable whether vaccination is of benefit. Persons following the usual tourist itinerary who use standard accommodations in countries reporting cholera are at virtually no risk of infection. Travelers to cholera-infected areas are advised to avoid eating uncooked food and to peel fruits themselves. Carbonated bottled water and carbonated soft drinks are usually safe.

TABLE 6. **Cholera Vaccine**

Doses	Intradermal route* 5 years of age and over	Subcutaneous or intramuscular route			Comments
		6 months-4 years of age	5-10 years of age	> 10 years of age	
Primary	0.2 ml	0.2 ml	0.3 ml	0.5 ml	Give 1 week to 1 month or more apart
Booster	0.2 ml	0.2 ml	0.3 ml	0.5 ml	1 dose every 6 months

*Adequate levels of protection (antibody) may be achieved in children less than 5 years of age by subcutaneous or intramuscular routes.

Currently available vaccines have been shown to provide only about 50 percent effectiveness in reducing clinical illness for 3-6 months after vaccination, with the greatest protection for the first 2 months.

For persons vaccinated in the United States for travel to countries that require vaccination, a single dose of vaccine is sufficient to satisfy International Health Regulations. The complete primary series is suggested only for special high-risk groups that work and live in highly endemic areas under less than adequate sanitary conditions and those persons with compromised gastric defense mechanisms (e.g., antacid therapy, previous surgery for gastric or duodenal ulcer, or achlorhydria). The primary series need never be repeated for the booster doses to be effective. Table 6 summarizes the recommended doses for primary and booster vaccinations. The vaccine is not recommended for infants under 6 months of age. See pp 73 for discussion of cholera immunization schedule for infants who will be traveling.

Yellow Fever **Simultaneous Administration of Other Vaccines and Drugs**

For information about the timing of the administration of Yellow Fever and Cholera vaccines (p 114).

Precautions and Contraindications

Vaccination often results in 1-2 days of pain, erythema, and induration at the site of injection. The local reaction may be accompanied by fever, malaise, and headache. Serious reactions to vaccination are extremely rare. If a person has experienced a serious reaction to the vaccine, revaccination is not advisable.

Pregnancy

Specific information is not available on the safety of cholera vaccine during pregnancy. Therefore, it is prudent on theoretical grounds to avoid vaccinating pregnant women.

■ DENGUE FEVER

Dengue fever is a viral disease transmitted by mosquitoes, usually *Aedes aegypti* in urban outbreaks. Dengue viruses are endemic in the South Pacific and in tropical countries of Asia, most of the countries in the Caribbean and Central America, and in some South American and African countries. In 1984, dengue activity in the Americas occurred mainly in Aruba and Mexico. It is not possible to accurately predict future dengue incidence, however, it is anticipated that there will be increased dengue transmisssion in the Americas during the next several years.

The illness is characterized by sudden onset, high fever, severe headache, joint and muscle pain, and rash. The rash appears 3-4 days after onset of fever and may spread from the torso to arms, legs, and face. Severe and sometimes fatal hemorrhagic disease may develop in a small percentage of cases.

The vector mosquito is active in the day time and most frequently is found near human habitations where it breeds in containers containing relatively clean water such as discarded tires, cans, barrels, and cisterns.

The risk of dengue infection for the international traveler appears to be small; however, travelers to endemic areas should take precautions to avoid mosquito bites. Travelers can reduce their risk of acquiring dengue by remaining in well-screened areas when possible. Outdoor exposure to mosquitoes can be reduced by wearing clothing that adequately covers the arms and legs and by applying mosquito repellent.

Travelers should advise their physician of any acute febrile illness occurring within 1 month after leaving an endemic area. There is no licensed vaccine against dengue fever.

■ DIPHTHERIA, TETANUS, AND PERTUSSIS

Diphtheria remains a serious disease throughout much of the world. Most cases occur in unimmunized or inadequately immunized persons.

Tetanus is a global health problem. The disease occurs almost exclusively in persons who are unimmunized or inadequately immunized or whose history is unknown. In developing countries most reported illness occurs in infants and young children.

Pertussis primarily occurs in children and is common in countries where immunization is not generally provided. It is highly communicable and frequently associated with complications, severe sequelae, and a high case-fatality ratio in infants.

Immunizations for Persons Less Than 7 Years of Age

Simultaneous immunization against diphtheria, tetanus, and pertussis during infancy (see Tables 2 and 3) is recommended. Because the incidence and severity of pertussis decreases with age and because the vaccine causes side effects and adverse reactions, routine pertussis immunization is not recommended for persons 7 years of age or older except under unusual circumstances.

Primary immunization for children up to the seventh birthday consists of four doses of DTP vaccine*, the first three doses given 4 to 8 weeks apart and the fourth dose given 6 to 12 months after the third. Ideally, immunization should

*Official name: Diphtheria and Tetanus Toxoids and Pertussis Vaccine Adsorbed

begin at 6 weeks-two months of age. Once the primary series is started, doses need not be repeated, regardless of the interval. A booster dose is recommended between 4 and 6 years of age. The booster dose is not necessary if the fourth dose in the primary series was given after the fourth birthday. Children inadequately immunized for their age should be brought up-to-date prior to travel. See pp 71 for discussion of DTP immunization schedule modifications for infants who will be traveling.

Immunizations for Persons 7 Years of Age and Older

For primary immunization, persons 7 years of age and over should receive three doses of tetanus-diphtheria toxoid, adult type (Td)* , the first two doses 4 to 8 weeks apart and the third 6 to 12 months later. Once the primary series is started, doses need not be repeated, regardless of the interval. Booster injections of Td are recommended every 10 years.

Adverse Reactions

Local reactions, generally erythema and induration with or without tenderness, are common after the administration of vaccines containing diphtheria, tetanus, and pertussis antigens. Mild systemic reactions such as fever, drowsiness, fretfulness and anorexia occur quite frequently. More severe systemic events such as fever $\geq 105°F$, persistent or unusual, high-pitched crying, collapse or convulsions, occur relatively infrequently. Rarely, severe neurologic events such as prolonged convulsions, or encephalopathy have occurred after receiving DTP. The receipt of DTP is not causally related to sudden infant death syndrome (SIDS).

Rarely, an anaphylactic reaction has been reported after receiving preparation containing diphtheria, tetanus and/or pertussis. Arthus-type hypersensitivity reactions, characterized by severe local reactions, may follow receipt of tetanus toxoid, particularly in adults who have received frequent (e.g. annual) boosters of tetanus toxoid.

Precautions and Contraindications

Neurologic conditions characterized by changing developmental findings are considered contraindications to receipt of pertussis vaccine. Such disorders include uncontrolled epilepsy, infantile spasms and progressive encephalopathy. Children who because of perinatal complications or other phenomena are felt to be at an increased risk of latent onset of central nervous disorders should have immunization with DTP or DT** (but not OPV) delayed until further observation and study have clarified the child's neurologic status. The decision whether to commence immunization with DTP or with DT should be made no later than the child's first birthday. Infants and children with stable neurologic conditions such as cerebral palsy and developmental delay or even well-controlled seizures may be vaccinated. A single seizure, temporally unassociated with DTP, while necessitating evaluation, need not contraindicate DTP immunization. Parents of infants and children with histories of convulsion should be made aware of the slightly increased chance of post immunization seizures. Children who have received a dose of DTP and who experience a neurologic disorder, e.g., a seizure, temporally unassociated with the administration of vaccine but before the next scheduled dose, should

*Official name: Tetanus and Diphtheria Toxoids Adsorbed (for adult use)

**Official name: Diphtheria and Tetanus Toxoids Adsorbed (for pediatric use)

have their neurologic status clarified before a subsequent dose of DTP is given, or the decision to use DT instead is made.

When an infant or child is to receive another dose in a series of DTP injections, the parent should be questioned about adverse events after the previous dose. Further vaccination with DTP is contraindicated if allergic hypersensitivity followed a DTP dose or if any of the following occurred within 48 hours of a prior dose of DTP: temperature ≥ 105°F; collapse or shock-like state; persisting, uncontrolled crying lasting 3 hours or more or an unusual, high-pitched cry. If convulsion(s) with or without a fever occurred within 3 days of receipt of DTP, the child should be fully evaluated to clarify his/her medical and neurologic status before a decision is made on continuing vaccination with DTP. Finally, if a child experienced an encephalopathy within 7 days of receipt of DTP, he/she should probably not receive additional doses of DTP.

The only contraindication to tetanus and diphtheria toxoids is a history of a neurologic or severe hypersensivity reaction following a previous dose. Although there is no evidence that tetanus and diphtheria toxoids are teratogenic, waiting until the second trimester of pregnancy to administer Td is a reasonable precaution to minimize any theoretical concern about teratogenicity.

■ ENCEPHALITIS, JAPANESE

Japanese encephalitis (JE) is a mosquito-borne viral encephalitis which may occur in epidemics in late summer and autumn in the northern part of tropical zones in India, Bangladesh, Korea, China, Nepal, Burma, Viet Nam, Japan, Thailand, and eastern areas of the Union of Soviet Socialist Republics. In endemic areas of JE, where there is no seasonal pattern, the risk is lower, but occasional outbreaks do occur. These areas include the tropical zones of south India, Indonesia, Malaysia, Singapore, south Thailand and Sri Lanka. Case fatality rates are generally reported to be about 20%. Children are most commonly infected in all regions, however, multiple factors such as occupation, recreational exposure, sex (possibly reflecting exposure), previous vaccination, and naturally acquired immunity, alter the potential for age-related clinically evident disease. JE cases have a higher case-fatality rate in the elderly, whereas, serious sequelae are more frequent in the very young.

JE virus is transmitted by the bites of vector mosquitoes; the species involved varies by geographic area. In China and many other areas, *Culex tritaeniorhynchus* is the principal vector. This species feeds outdoors beginning at dusk and during evening hours, and has a wide host range including domestic animals, birds, and man. Larvae are found in flooded rice fields, marshes and small stable collections of water around cultivated fields. The vectors are present in greatest numbers from June through September throughout their distribution and are inactive in temperate zones during winter months. Swine and certain species of wild birds function as viremic reservoir hosts in the transmission cycle. Habitats supporting the transmission cycle of JE virus are necessarily rural-agricultural. In many areas of Asia, however, the appropriate ecological conditions for virus transmission occur near urban centers.

TABLE 7. Japanese Encephalitis Vaccine

Doses	Subcutaneous route		Comments
	< 3 years of age	≥3 years of age	
Primary series 1,2, and 3*	0.5 ml	1.0 ml	Give 1-2 weeks apart
Booster			1 dose at 12-18 months and at 4 year intervals thereafter if risk continues

*Manufacturer's recommendations vary from 2 to 3 doses. Recent limited study in the U.S. suggests a 3-dose primary series may be preferable.

The risk to short-term travelers and persons who confine their travel to urban centers is low. Persons at greatest risk are those living for prolonged periods of time in endemic or epidemic areas. In temperate areas such as China, the risk of transmission during the winter months is negligible. In subtropical and tropical areas, the risk of transmission is present throughout the year but it is accentuated during the rainy season and early dry season when mosquito populations are highest. Travel in rural areas where rice culture and pig farming are common increases the risk of contracting JE. In such areas, use of window screens, insecticidal space sprays within screened quarters, mosquito repellent, and protective clothing to avoid mosquito bites is recommended.

Vaccination

JE vaccine is not produced in the U.S. but it is made by several companies in Japan. The vaccine manufactured by Biken Laboratories* has been in production for the longest time. Vaccination should be considered for persons who plan long-term residence in areas experiencing epidemic JE especially when the travelers' activity will include trips into rural, farming areas or sleeping in unscreened quarters. Short-term travelers (less than 1 month), especially those restricting visits to major urban areas and staying in mosquito-proof quarters are at negligible risk of JE infection. Individual consideration of the level of risk should include an evaluation of the traveler's in-country activities relative to the risk factors described in the background information given above, and recent information of the level of JE activity in the country. The location of a regional JE vaccination center in the United States may be obtained from DVBVD, CDC, Fort Collins (303-221-6429). Biken vaccine is not licensed for use in the U.S., but is available from CDC on a limited investigational basis.

Contraindications

The manufacturer recommends that JE vaccine should not be administered to persons acutely ill with fever and/or active infections, those with cardiac, renal, or hepatic disorders, leukemia, lymphoma, or other generalized malignancies, those with a history of hypersensitivities, and pregnant females.

*Use of names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

■ ENCEPHALITIS, TICKBORNE

Tickborne encephalitis (TBE) is a viral infection of the central nervous system. It occurs in the Union of Soviet Socialist Republics (USSR) and eastern Europe from April through August when the principal tick vectors are active. TBE is of particular importance in Austria, Czechoslovakia, the Germanys, Hungary, Poland, Switzerland, Union of Soviet Socialist Republics, and northern Yugoslavia. It is less frequent in Bulgaria, Romania, Denmark, France, the Aland Islands and neighboring Finnish coastline, and along the coastline of southern Sweden from Uppsala to Karlshamn. Serologic evidence for TBE infection or small numbers of cases have been found in Albania, Greece, Italy, Norway, and Turkey. Morbidity rates are higher in far eastern regions of the USSR and lower in central and eastern Europe.

Human infections are caused by tick bite, usually in persons who visit or work in forested areas, or by consumption of unpasteurized dairy products from infected cows or sheep. The risk to travelers who do not visit forested areas or consume unpasteurized dairy products is apparently low. The traveler should be advised to avoid tick infested endemic areas or to institute rigorous tick protective measures including use of repellent formulations. The most effective repellents are those which contain the highest N,N diethyl-meta-toluamide (deet) concentrations. Compounds containing permethrin, that are used for treatment of clothing, have an acaracidal and repellent effect; clothing treated with this substance provides the most effective and long-term protection against tick bites. Consumption of unpasteurized dairy products should be avoided. Although an effective vaccine may be obtained in Europe from Immuno, Vienna, Austria, present data do not support a recommendation for its use in travelers to the endemic Western European countries (see JID 152:650-651, Sept. 1985).

■ GIARDIASIS

Giardiasis occurs worldwide. Transmission occurs from consumption of fecally contaminated water or food and by the fecal-oral route from person-to-person. Symptoms include diarrhea, abdominal cramps, fatigue, weight loss, flatulence, anorexia, nausea, usually lasting more than 5 days. Fever and vomiting are rare. There is no known chemoprophylaxis. Travelers to endemic areas are advised to follow the precautions included under "Health Hints for the Traveler" (pp. 132-134). Persons who have prolonged gastrointestinal symtoms after returning from an endemic area should consult a physician.

■ HAEMOPHILUS INFLUENZAE, TYPE b MENINGITIS AND SYSTEMIC DISEASE

Haemophilus influenzae causes serious systemic bacterial illnesses, primarily among children less than 5 years of age. Severe disease is most common in children 6 months to 1 year of age, but 35 percent of severe disease occurs in children 5 years of age or older. It is the most common cause of bacterial meningitis in the United States. The risk of exposure to the organism and the disease while traveling outside the United States is probably comparable to that within the United States. A single dose of the vaccine, Haemophilus b polysaccharide vaccine (HbPV), is recommended for all children at 24 months of age or as soon as possible thereafter

Immunization may be considered for those children 18-23 months of age who are in groups thought to have an increased risk of acquiring disease. Vaccine may also be administered to children 3-4 years of age. Immunogenicity is higher in children immunized at or after 24 months of age than in children immunized between 18 and 23 months of age. Vaccine is not recommended for any children less than 18 months of age. Children who have had invasive *H. influenzae* type b disease when they were under 24 months of age should still receive HbPV following the above recommendations, since most children under 24 months of age fail to mount an immune response to the clinical disease.

Because satisfactory response to the vaccine is not consistent among children vaccinated with HbPV between 18-23 months of age, it would be reasonable to reimmunize these children 2-12 months after the initial dose, but not before 24 months of age.

Side Effects and Adverse Reactions

Polysaccharide vaccines such as HbPV are considered relatively free of side effects. Redness and/or swelling following receipt of the current HbPV occurs in less than 2 percent of recipients. About 1 out of every 100 recipients will have a fever of 101.3°F or higher. These reactions begin within 24 hours and generally subside rapidly. Rarely, severe hypersensitivity reactions have occurred.

Precautions and Contraindications

Recurrent upper respiratory diseases, including otitis media and sinusitis, are not considered indications for vaccination.

The current vaccine has been shown not to be efficacious in children less than 18 months of age.

■ HEPATITIS, VIRAL, TYPE A

Hepatitis A is an enterically transmitted virus disease which is highly endemic throughout the developing world but of low endemicity in developed countries such as the United States. In developing countries, hepatitis A is usually acquired during childhood, most frequently as an asymptomatic or mild infection. Transmission may occur by direct person-to-person contact; or from contaminated water, ice or shellfish harvested from sewage-contaminated water; or from fruits, vegetables or other foods which are eaten uncooked, but which may become contaminated during handling. The virus is inactivated by boiling or cooking to 85°C (1 minute); cooked foods cannot serve as vehicles for disease unless contaminated after cooking. Adequate chlorination of water as recommended in the United States will inactivate the hepatitis A virus.

The risk of acquiring hepatitis A for U.S. citizens traveling abroad varies with living conditions, length of stay, and incidence of hepatitis A in the area visited. Travelers to developed countries in Europe, North America, Japan, Australia and New Zealand are at no greater risk of infection than in the United States. For travelers to developing countries, risk of infection can vary greatly, and depends on type, duration, and place of travel. Travelers visiting primarily tourist areas in large cities and eating and drinking exclusively in tourist class accommodations are at less risk than travelers to small villages or rural areas, or those who eat and

TABLE 8. Immune Globulin For Protection Against Viral Hepatitis A

Length of stay	Body Weight		Dose volume*	Comments
	lb	kg**		
Short term travel (< 3 mos)	< 50	< 23	0.5 ml	Dose volume depends on body weight and length of stay
	50-100	23-45	1.0 ml	
	> 100	> 45	2.0 ml	
Long term travel (> 3 mos)	< 22	< 10	0.5 ml	
	< 50	< 23	1.0 ml	
	50-100	23-45	2.5 ml	
	> 100	> 45	5.0 ml	

*For intramuscular injection

**kg = approximately 2.2 lbs.

drink in local restaurants or markets where food and water are of questionable quality. Trekkers, backpackers, and others with more adventurous travel styles may be at considerable risk of acquiring hepatitis A. In developing countries, the best way to prevent hepatitis A and other enteric diseases is to avoid potentially contaminated water or food. Drinking water, or beverages with ice, of unknown purity and eating uncooked shellfish or uncooked fruits or vegetables that are not peeled or prepared by the traveler should be avoided.

Immune globulin (IG)* prophylaxis is recommended for travelers to developing countries who will be living or visiting rural areas and eating or drinking in settings of poor or uncertain sanitation, i.e. local markets, restaurants, food vendors. It is also recommended for travelers who will have close contact with local persons, especially young children, in settings with poor sanitation. Persons who plan to reside in developing countries should receive IG regularly if they anticipate exposure as described above.

For such travelers, a single dose of IG of 0.02 ml/kg is recommended if travel is for less than 3 months. For prolonged travel, 0.06 ml/kg should be given every 5 months (for approximate dosages see Table 8). For persons who require repeated IG prophylaxis, screening for total anti-HAV antibodies before travel may be useful to define susceptibility and eliminate unnecessary doses of IG in those who are immune. See pp 74 for discussion of IG immunization schedule for infants who will be traveling.

Safety

Immune globulins prepared in the United States have few side effects (primarily soreness at the injection site) and have never been shown to transmit infectious agents (hepatitis B, non-A non-B hepatitis or causative agent of AIDS (HTLV-III/LAV). Recent specific laboratory studies have additionally shown that immune globulins prepared by the Cohn-Oncley procedure (the standard procedure used in U.S. manufactured preparations) carry no risk of transmission of AIDS. Pregnancy is not a contraindication to using immune globulin.

*Formerly called immune serum globulin and gamma globulin.

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■ HEPATITIS, VIRAL, TYPE B

The risk of hepatitis B virus (HBV) infection for international travelers is generally low, except for certain travelers in countries with high HB endemicity. Factors to consider when assessing risk include: 1) the prevalence of HBV carriers in the local population, 2) the extent of direct contact with blood, or secretions, or of intimate sexual contact with potentially infected persons, and 3) the duration of travel.

The prevalence of HBV carriers is high (5-20%) in all socioeconomic groups in certain areas: all of sub-Saharan Africa, Southeast Asia including China, Korea, and Indonesia, South Pacific Islands, interior Amazon Basin, and certain parts of the Caribbean, i.e. Haiti and the Dominican Republic. It is moderate (1-5%) in North Africa, South Central and Southwest Asia, Japan, Eastern and Southern Europe and the USSR, and most of Middle and South America. In Northern and Western Europe, North America, Australia and New Zealand, HBV carrier prevalence is low (less than 1%) in the general population.

Hepatitis B virus is primarily transmitted through activities which result in exchange of blood or blood-derived fluids; and through sexual activity, either heterosexual or homosexual, between an infected and a susceptible person. Principle activities which may result in blood exposure include work in health care fields, i.e. medical, dental, laboratory which entail direct exposure to human blood, receipt of blood transfusions which have not been screened for HBV, and having dental, medical, or other exposure, e.g. acupuncture, tattooing, or drug abuse, to needles which have not been appropriately sterilized. In addition, in less developed areas, open skin lesions in children or adults due to factors such as impetigo, scabies, and scratched insect bites, may play a role in disease transmission if direct exposure to wound exudates occurs.

HB vaccination should be considered for several groups of travlers: health care workers, persons residing for long-term in high HB endemicity countries, and certain short-term travelers to high HB endemicity areas. HB vaccination is currently recommended for all persons who work in health care fields (medical, dental, laboratory or other) which entail exposure to human blood. Previously unvaccinated persons who will work in health care fields for any duration in high or moderate HB endemicity areas are strongly advised to receive HB vaccine prior to such travel.

HB vaccination should also be considered for persons who plan to reside (greater than 6 months) in areas with high levels of endemic HB and who will have any of the previously discussed types of contact with the local population. In particular, persons who anticipate sexual contact with the local population, who will live in rural areas and/or have intimate daily contact with local populations; and persons who are likely to seek medical, dental or other treatment in local facilities during their stay should receive the vaccine. Vaccination should be considered for short-term travelers (< 6 months) who will have direct contact with blood, or sexual contact with residents of areas with high levels of endemic HB infection.

Primary adult vaccination consists of 3 intramuscular doses of 1.0 ml (20 μg) of vaccine each. The second dose should be given 1 month after the first dose, and the third dose 6 months after the first. Children under age 10 should receive three 0.5 ml (10 μg) doses by the same schedule. Vaccine doses administered at longer intervals provide equally satisfactory protection, but optimal protection is not conferred until after the third dose. Vaccination should ideally begin at least 6 months

before travel in order to complete the full vaccine series prior to departure. However, since some protection is provided by one or two doses, the vaccine series should be initiated, if indicated, even if it cannot be completed prior to departure. There is no evidence of interference between HB vaccine and other simultaneously administered vaccine(s) or with immunoglobulin. The duration of protection and the need for booster doses have not yet been determined. The optimum site of injection in adults is the deltoid muscle; vaccination in the buttocks results in poorer antibody response. See pp 74 for discussion of HB immunization schedule for infants who will be traveling.

Safety

Side-effects observed to date have been limited to soreness and redness at the site of injection. The vaccine production process has been shown to inactivate representatives of all classes of viruses found in blood including the causative agent of AIDS (HTLV III/LAV).

Pregnancy

Specific data are not available on the safety of the vaccine for the developing fetus, but because it contains only non-infectious HBsAg particles, administration of vaccine to pregnant women is not considered to constitute a risk to the fetus. In contrast, HBV infection in a pregnant woman may result in serious disease for the mother and chronic infection for the newborn. Pregnancy is not a contraindication to the use of this vaccine for persons at risk.

Enterically Transmitted Non-A, Non-B Hepatitis (Epidemic Non-A, Non-B; Fecal-Oral Non-A, Non-B)

In recent years, epidemics of non-A, non-B hepatitis spread by water or close personal contact have been reported from several areas of South Asia (southern USSR, Pakistan, Indian subcontinent, Burma) and North Africa. Such epidemics generally affect adults and cause an unusually high mortality in pregnant women. The disease has been transmitted to experimental animals and candidate viruses have been identified; however, no serologic tests have yet been developed. Several cases of this form of non-A, non-B hepatitis have been imported into the United States but it is not known whether the causative agent is endemic in the United States or Western Europe.

Travelers to areas where enterically transmitted non-A, non-B hepatitis occurs (see above) may be at some risk of acquiring this disease by close contact with cases or through contaminated food or water. The value of immune globulin (IG) in prevention of this infection is unknown. Travelers to these areas should receive IG for protection against hepatitis A, but they should not assume that they are protected against enteric non-A, non-B hepatitis. The best prevention of infection is to avoid potentially contaminated food or water, as with hepatitis A and other enteric infections.

■ LASSA FEVER

Lassa fever is known to be endemic only in rural West Africa. It is spread by direct or indirect contact with infected rodents and by direct person to person transmission. The risk of infection in international travel is considered small.

■ LEISHMANIASIS

Leishmaniasis occurs in both a cutaneous and a visceral form. The infection is transmitted by the bite of phlebotomine sandflies. Visceral leishmaniasis causes fever, enlargement of the liver and spleen, and anemia. It is a disease of rural tropical and subtropical areas throughout the world, but is more common in the Eastern Hemisphere. Cutaneous disease, manifested by a nonhealing ulcer at the site of the sandfly bite, also is widely distributed in the tropics. Control measures include the use of insect repellents and protective clothing.

■ MALARIA

Malaria in humans is caused by one of four protożoan species of the genus *Plasmodium*: *P. falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*. All are transmitted by the bite of an infected female *Anopheles* mosquito. Occasionally transmission occurs by blood transfusion or by congenital means from mother to fetus. The disease is characterized by fever and flu-like symptoms including chills, headache, myalgias, and malaise, which may occur at intervals. Malaria may cause anemia and jaundice, and *P. falciparum* infections may cause kidney failure, coma, and even death. Deaths due to malaria are preventable.

Malaria information by country, which is presented in tabular form on pp 15-57, is derived from various sources including the World Health Organization. While this is the most accurate information available at the time of publication, it must be stated that factors which can vary from year to year, such as local weather conditions, mosquito vector density, and prevalence of infection, can have a marked effect on local malaria transmission patterns.

Risk of Acquiring Malaria

Malaria transmission occurs in large areas of Central and South America, sub-Saharan Africa, the Indian Subcontinent, Southeast Asia, and Oceania. The estimated risk of acquiring malaria varies markedly from area to area. This variability is a function of the intensity of transmission in both urban and rural areas within the various regions, and also a function of the itineraries of most travelers to the various areas. For example, during 1982-1984, 358 cases of *P. falciparum* among American civilians were reported to the CDC. Of these, 256 (72%) were acquired in sub-Saharan Africa, 11 (3%) were acquired in Southeast Asia, and 7 (2%) were acquired in South America. Of the 10 fatal infections, 9 were acquired in sub-Saharan Africa. Thus, the preponderance of imported malaria among American travelers was acquired in sub-Saharan Africa, despite the fact that only an estimated 90,000 Americans travel to sub-Saharan Africa each year, versus an estimated 900,000 American travelers to Southeast Asia and South America each year. This disparity in the risk of acquiring malaria can probably be explained by the fact that travelers to Africa are at risk in both rural and urban areas, and moreover, tend to spend considerable amounts of time, including evening and nighttime hours, in

rural areas where risk is highest, e.g. game parks and other rural tourist sites. In contrast, most travelers to Southeast Asia, (Thailand, Indonesia, Malaysia, and the Philippines), and South America spend most of their time in urban or resort areas where there is limited, if any, risk of exposure, and only travel to rural areas during daytime hours when there is limited risk of infection.

General Advice for Travelers to Malaria-Endemic Areas

All travelers to malarious areas of the world are advised to use an appropriate drug regimen and personal protection measures to prevent malaria. However, travelers must be informed that, regardless of methods employed, it is still possible to contract malaria. Malaria symptoms can develop as early as 8 days after initial exposure in a malaria-endemic area and can appear months after departure from a malarious area, even after chemoprophylaxis is discontinued. It is important for travelers to understand that malaria can be effectively treated early in the course of the disease but that delaying appropriate therapy can have serious or even fatal consequences. Individuals who have the symptoms of malaria should seek prompt medical evaluation including thick and thin malaria smears *as soon as possible;* neither the physician nor the traveler should presumptively ascribe the symptoms to a "flu-like" illness.

Personal Protection Measures

Because of the nocturnal feeding habits of *Anopheles* mosquitoes, malaria transmission occurs primarily between dusk and dawn. Travelers must be advised of the importance of measures to reduce contact with mosquitoes during those hours. Such measures include remaining in well-screened areas, using mosquito nets, and wearing clothes that cover most of the body. Additionally, travelers should be advised to purchase insect repellent before travel to use on any exposed areas of skin. The most effective repellents contain N,N diethylmetatoluamide (deet), an ingredient in many commercially available insect repellents. The actual concentration of deet varies from product to product (ranging up to 95 percent); the higher the concentration the longer lasting the repellent activity. Travelers should also be advised to purchase a pyrethrum-containing flying-insect spray to use in living and sleeping areas during evening and nighttime hours.

Chemoprophylaxis

Malaria chemoprophylaxis is the use of drugs to prevent the development of the disease. Malaria chemoprophylaxis should begin 1-2 weeks prior to travel to malarious areas. In addition to assuring adequate blood levels of the drug, this allows any potential side-effects to be evaluated and treated by the traveler's own physician. Chemoprophylaxis should then continue during travel in the malarious areas and for 6 weeks after leaving the malarious areas.

In choosing an appropriate chemoprophylactic regimen prior to travel, several factors should be taken into consideration. The travel itinerary should be reviewed in detail and compared with the information on areas of risk within a given country (pp. 15-57) to determine whether the traveler will actually be at risk of acquiring malaria. It should also be determined whether the traveler will be at risk of acquiring chloroquine-resistant *P. falciparum* (CRPF) malaria. In addition, it should be

established whether the traveler has previously experienced an allergic or other reaction to the antimalarial drug of choice, and whether medical care will be readily accessible during travel.

Chemoprophylactic Regimens (to be used in conjunction with pp. 15-57)

Regimen A: For travel to areas of risk where chloroquine-resistant P. falciparum has NOT been reported or where only low-level or focal chloroquine-resistance has been reported; once-weekly use of chloroquine *alone* is recommended. Chloroquine is usually well tolerated. The few people who experience uncomfortable side-effects may tolerate the drug better by taking it with meals, or in divided, twice-weekly doses. As an alternative, the related compound hydroxychloroquine may be better tolerated. See Table 9 for recommended dosages.

Regimen B: For short-term travel (3 weeks or less) to areas of risk where chloroquine-resistant P. falciparum IS endemic; once-weekly use of chloroquine *alone* is recommended. In addition, travelers to these areas (except those with histories of sulfonamide intolerance) should be given a treatment dose of Fansidar® to be kept in their possession during travel. These individuals should be advised to take the Fansidar® promptly in the event of a febrile illness during their travel *when professional medical care is not readily available.* It must be emphasized to these travelers that such presumptive self-treatment of a possible malarial infection is *only a temporary measure and that prompt medical care is imperative.* They should be advised to continue their weekly chloroquine prophylaxis after presumptive treatment with Fansidar®. See Table 9 for recommended dosages.

Doxycycline *alone* taken daily is an alternative regimen for short-term travel to areas of risk where there is chloroquine-resistant *P. falciparum.* It is particularly appropriate for those individuals with a history of sulfonamide intolerance. Travelers who use doxycycline should be cautioned about the possible side effects as described in the section on adverse reactions. See Table 9 for recommended dosages.

Regimen C: For prolonged travel (greater than 3 weeks) in areas where chloroquine-resistant* P. falciparum *IS endemic; once-weekly use of both chloroquine and Fansidar® may be indicated, except for those travelers with histories of sulfonamide intolerance. This regimen should be considered for travelers to areas where the transmission of CRPF is most intense, (such as, East and Central Africa, Papua New Guinea, Irian Jaya, Solomon Islands, Vanuatu); to areas where there is limited availablity of medical care; and for travelers who are elderly, immunocompromised, or who have other significant underlying medical conditions. The potential benefit of the routine prophylactic use of Fansidar® for these travelers must be weighed against the risk of possible serious or fatal adverse reactions. *If weekly use of Fansidar® is prescribed, the traveler should be cautioned about the possible side effects as described in the section on adverse reactions.* See Table 9 for recommended dosages.

Primaquine: Prevention of Relapses of Plasmodium vivax and Plasmodium ovale

Unlike *P. falciparum* and *P. malariae*, *P. vivax* and *P. ovale* have forms which can persist in the liver and cause relapses for as long as 4 years after routine chemoprophylaxis is discontinued. Travelers to malarious areas should be alerted to this

•Use of names is for identification only and does not imply endoresement by the Public Health Service or the U.S. Department of Health and Human Services.

TABLE 9. Drugs Used in The Prophylaxis and Presumptive Treatment of Malaria

Drug	Routine prophylaxis		Presumptive treatment for travelers to areas of chloroquine-resistance	
	Adult dose	Pediatric dose	Adult dose	Pediatric dose
Chloroquine phosphate (Aralen®)	300 mg base (500 mg salt) orally, once/week	5 mg/kg base (8.3 mg/kg salt) orally, once/week, up to maximum adult dose of 300 mg base	Chloroquine is not recommended for the presumptive treatment of malaria acquired in areas of known chloroquine resistance.	
Hydroxychloroquine sulfate (Plaquenil®)	310 mg base (400 mg salt) orally, once/week	5 mg/kg base (6.5 mg/kg salt) orally, once/week, up to maximum adult dose of 310 mg base	Hydroxychloroquine is not recommended for the presumptive treatment of malaria acquired in areas of known chloroquine-resistance.	
Pyrimethamine-sulfadoxine (Fansidar®)	1 tablet (25 mg pyrimethamine and 500 mg sulfadoxine) orally, once/week	2-11 mos: 1/8 tab/wk 1-3 yrs: 1/4 tab/wk 4-8 yrs: 1/2 tab/wk 9-14 yrs: 3/4 tab/wk >14 yrs: 1 tab/wk	3 tablets (75 mg pyrimethamine and 1500 mg sulfadoxine), orally, as a single dose	2-11 mos: 1/4 tab 1-3 yrs: 1/2 tab 4-8 yrs: 1 tab 9-14 yrs: 2 tabs >14 yrs: 3 tabs as a single dose
Doxycycline	100 mg orally, once/ day	>8 years of age: 2 mg/kg of body weight orally/day up to adult dose of 100 mg/day	Tetracyclines are not recommended for the presumptive treatment of malaria.	
Primaquine	15 mg base (26.3 mg salt) orally, once/day for 14 days or 45 mg base (79 mg salt) orally, once/week for 8 weeks	0.3 mg/kg base (0.5 mg/kg salt) orally once/day for 14 days, or 0.9 mg/kg base (1.5 mg/kg salt) orally, once/week for 8 weeks	Primaquine is only recommended for use after leaving an endemic area to prevent relapses of *P. vivax* and *P. ovale*.	

risk, and if they develop malaria symptoms after they return home, they should report their travel history and the possibility of malaria to a physician as soon as possible. Primaquine prevents relapses by acting against the liver stages of *P. vivax* and *P. ovale*, however, it is not indicated for all travelers. Primaquine is administered after leaving an endemic area, usually in conjunction with chloroquine during the last 2 weeks of the 6 week prophylaxis period following the termination of exposure in an endemic area.

Since most malarious areas of the world (except Haiti) have at least one species of relapsing malaria, travelers to these areas have some risk of acquiring either *P. vivax* or *P. ovale*. Unfortunately, it is extremely difficult to quantify this risk. Prophylaxis with primaquine is generally indicated for persons who have had prolonged exposure in malaria-endemic areas e.g. missionaries and Peace Corps Volunteers. While it is impossible to define the actual risk to the traveler with less intense exposure, it should be stated that with the exception of glucose-6 -phosphate dehydrogenase (G6PD) deficient individuals (see discussion of adverse reactions), most people can safely tolerate the standard regimen of primaquine, and can be considered candidates for prophylaxis with primaquine.

Adverse Reactions and Contraindications to Antimalarials

While the frequent or serious side effects of recommended antimalarials are discussed below, physicians should review complete prescribing information in standard pharmaceutical reference texts, and in the manufacturers' package inserts.

Chloroquine and ***hydroxychloroquine*** rarely have serious adverse reactions when taken at prophylactic doses for malaria. Occasionally, minor side-effects such as gastrointestinal disturbance, headache, dizziness, blurred vision, and pruritus may occur, but generally this does not necessitate stopping the use of the drug. While chloroquine, when used in high doses such as that used to treat rheumatoid arthritis, has been associated with retinopathy, this serious side-effect has not been associated with routine weekly prophylaxis. However, it would seem prudent to recommend periodic ophthalmologic examinations for persons using chloroquine for extended periods (more than 6 years of continuous weekly prophylaxis). Chloroquine and related compounds may cause acute exacerbations of psoriasis.

Amodiaquine, a 4-aminoquinoline similar to chloroquine in structure and activity, has been used as an alternative prophylactic drug in areas where chloroquine-resistant *P. falciparum* is endemic. It is not commercially available in the United States. Amodiaquine associated agranulocytosis has been reported in travelers from the United Kingdom and Switzerland, countries where the drug has been commercially available. Therefore, amodiaquine is *not* recommended as an antimalarial prophylactic (MMWR 35:10, 1986).

Fansidar® (pyrimethamine/sulfadoxine) has been associated with severe adverse cutaneous reactions. Since Fansidar® became available in the United States in 1982, 24 cases of erythema multiforme, Stevens-Johnson syndrome, and toxic epidermal necrolysis have been documented among American travelers using Fansidar®. Seven of these reactions were fatal. Currently available data indicate that the incidence of fatal cutaneous reactions associated with the use of Fansidar® among American travelers ranges from 1/11,000 to 1/25,000 users. These severe cutaneous reactions have largely been associated with Fansidar® when used as once-weekly prophylaxis. Fansidar® has also been associated with serum-sickness type reactions, urticaria, exfoliative dermatitis, and hepatitis. IF ONCE-WEEKLY USE OF FANSIDAR® IS PRESCRIBED, THE TRAVELER SHOULD BE ADVISED TO DISCONTINUE IT IMMEDIATELY IF HE OR SHE DEVELOPS A POSSIBLE ILL EFFECT, ESPECIALLY IF THERE ARE ANY SKIN OR MUCOUS MEMBRANE SIGNS OR SYMPTOMS, SUCH AS ITCHING, REDNESS, RASH, MOUTH OR GENITAL LESIONS, OR SORE THROAT. The use of Fansidar® is contraindicated in persons with histories of sulfonamide intolerance and in infants under 2 months of age.

Doxycycline is a tetracycline and has the side-effects associated with this group of drugs. Travelers to tropical climates who use doxycycline should be made aware of the possibility of photosensitivity, usually manifested as an exaggerated sunburn reaction. The risk of such a reaction can be minimized by avoiding prolonged, direct exposure to the sun. Tetracyclines are contraindicated in pregnancy (see next section) and in children under 8 years of age.

Primaquine may cause severe hemolysis in glucose-6-phosphate dehydrogenase (G6PD) deficient individuals. Before using primaquine, G6PD deficiency should be ruled-out by appropriate laboratory testing.

Prophylaxis During Pregnancy or While Breast-Feeding

Malaria infection poses a serious threat to both a pregnant woman and her fetus. For this reason, and because **chloroquine** has not been found to have any

harmful effects on the fetus when used in the recommended doses for malaria prophylaxis, pregnancy is not a contraindication to malaria prophylaxis with chloroquine or **hydroxychloroquine**.

The safety of **Fansidar® (pyrimethamine/sulfadoxine)** during pregnancy has not been completely established. Experimental data demonstrating the teratogenic effect of pyrimethamine in laboratory animals has resulted in restrictions in the licensing of compounds containing pyrimethamine. However, pyrimethamine, both by itself and in combination with sulfonamides, has been used for nearly 30 years to treat pregnant women with toxoplasmosis (another protozoal parasitic infection). While caution must be exercised when extrapolating from accumulated case reports of women treated for this infection, it is difficult to implicate pyrimethamine as a cause of fetal abnormalities. Thus, while the teratogenic effect in animals cannot be ignored, published data cannot substantiate the inference that pyrimethamine is a human teratogen.

Sulfadoxine is a sulfonamide antimicrobial which, when administered during the last trimester of pregnancy, theoretically could compete with bilirubin for plasma proteins and exacerbate neonatal jaundice. It is unclear, however, whether this specific sulfa congener poses any risk to the newborn. Very small amounts of antimalarial drugs, including sulfa compounds and chloroquine, can enter breast milk of lactating women. The amount of drug so transferred is not thought to be harmful to the nursing infant; however, more information is needed.

Thus, the safety and utility of the pyrimethamine/sulfadoxine combination during pregnancy remain open to question. Ideally, women who are pregnant, or who are likely to become so, should not travel to areas where the presence of chloroquine-resistant malaria requires pyrimethamine/sulfadoxine prophylaxis. However, when pregnant women cannot avoid exposure to these strains of malaria, some experts believe that the threat of acute illness outweighs the potential danger from the drug combination, and favor protecting women with pyrimethamine/sulfadoxine. Pregnant women who are offered this drug for prophylaxis should be informed of the possible risks of fetal teratogenicity and neonatal jaundice before they take it.

Doxycycline, a tetracycline, is generally contraindicated during pregnancy, unless it is required to treat life-threatening infections in the mother.

Primaquine should not be used during pregnancy, due to the possibility that the drug may be passed transplacentally to a G6PD-deficient fetus, and cause life-threatening hemolytic anemia *in-utero*. Whenever radical cure or terminal prophylaxis with primaquine is indicated, chloroquine should be given once a week until delivery, at which time the decision to give primaquine may be made.

Chemoprophylaxis for Children

Children of any age can contract malaria. Consequently, the indications for prophylaxis are identical to those described for adults. Recommended dosages of antimalarial medications are listed in Table 9. However, doxycycline is contraindicated in children less than 8 years of age, and Fansidar® (pyrimethamine/sulfadoxine) is contraindicated in infants less than 2 months of age.

Chloroquine phosphate is manufactured in the U.S. in tablet form only, and tastes quite bitter. Pediatric doses should be calculated carefully according to body

weight. Pharmacists can pulverize tablets and prepare gelatin capsules with calculated pediatric doses. Mixing the powder in food or drink may facilitate the weekly administration of chloroquine to children. Alternatively, chloroquine in suspension is widely available overseas.

OVERDOSE OF ANTIMALARIAL DRUGS CAN BE FATAL. THE MEDICATION SHOULD BE STORED IN CHILDPROOF CONTAINERS OUT OF THE REACH OF CHILDREN.

■ MEASLES (Rubeola)

Measles is often a severe disease. Measles elimination efforts in the United States have resulted in record low numbers of reported measles cases. The low numbers of cases mean that there are decreasing chances that individuals will be exposed to natural measles; unvaccinated persons may reach older ages still susceptible to measles. The risk of exposure to measles outside the United States may be high. Approximately 20 percent of all the cases reported in the United States in 1985 were reported or resulted from importation from abroad. Many of these were among returning U.S. citizens exposed abroad. Although vaccination against measles is not a requirement for entry into any country, all travelers are strongly urged to be immune to measles. Persons can be considered immune to measles only if they have documentation of physician-diagnosed measles, laboratory evidence of measles immunity, or proof of adequate immunization with live measles vaccine* on or after the first birthday. Most persons born before 1957 are likely to have been infected naturally and generally need not be considered susceptible.

A single dose of live, attenuated measles vaccine administered subcutaneously in the volume specified by the manufacturer induces antibody formation in at least 95% of susceptibles vaccinated at 15 months of age or older. See pp 71 for discussion of measles immunization schedule modifications for infants who will be traveling.

Side Effects and Adverse Reactions

Primary vaccination may be associated with mild fever and transient rash beginning about the sixth day after vaccination and usually lasting 1-2 days. About 5%-15% of vaccinees may develop fever $\geq$ 103° F. Central nervous system conditions including encephalitis and encephalopathy (approximately 1 case for every million doses administered) have been reported. However, the incidence rate of these conditions following measles vaccination is lower than the observed incidence rate of encephalitis of unknown etiology suggesting the reported neurologic disorders may be caused by other factors. There is no upper age limit for vaccination. There is no evidence of a greater risk of reaction to live measles vaccine for those who have previously received live measles vaccine or had natural measles. Although recipients of killed vaccine may be more likely to experience local and systemic reactions after revaccination with live measles vaccine, these individuals should be revaccinated to avoid the severe atypical form of disease which often occurs after their exposure to natural measles.

*Official name: Measles Virus Vaccine, Live, Attenuated.

Precautions and Contraindications

Pregnancy

Live measles vaccine should not be given to females known to be pregnant. This precaution is based on the theoretical risk of fetal infection, which applies to administration of any live virus vaccine to females who might be pregnant or who might become pregnant within 3 months after vaccination.

Febrile Illness

Although vaccination of persons with febrile illness should be postponed until recovery, minor illnesses such as upper respiratory infections do not preclude vaccination.

Allergies

Live measles vaccine is produced in chick embryo cell culture. Hypersensitivity reactions very rarely follow the administration of live measles vaccine. Most of these reactions are considered minor and consist of wheal and flare or urticaria at the injection site. However, persons with a history of anaphylactic reactions (hives, swelling of the mouth and throat, difficulty breathing, hypotension or shock) subsequent to egg ingestion should be vaccinated only with extreme caution. One investigator has developed special protocols for vaccinating such individuals (J. Pediatr. 1983; 102:196-199). Evidence indicates that persons are not at increased risk if they have egg allergies that are not anaphylactic in nature. Such persons should be vaccinated in the usual manner. There is no evidence to indicate that persons with allergies to chickens or feathers are at increased risk of reaction to the vaccine.

Since measles vaccine contains trace amounts of neomycin (25 μg), persons who have experienced anaphylactic reactions to topically or systemically administered neomycin should not receive measles vaccine. Most often, neomycin allergy is manifested as a contact dermatitis which is a delayed-type (cell-mediated) immune response rather than anaphylaxis. In such individuals, the adverse reaction, if any, to 25 μg of neomycin in the vaccine would be an erythematous, pruritic nodule or papule at 48-96 hours. A history of contact dermatitis to neomycin is not a contraindication to receiving measles vaccine.

*Recent Administration of Immune Globulin (IG)**

Vaccination should be administered at least 14 days before or deferred for at least 6 weeks, preferably 3 months, after administration of IG because passively acquired antibodies might interfere with the response to the vaccine.

Tuberculosis

Tuberculosis may be exacerbated by natural measles infection. There is no evidence, however, that live measles virus vaccine has such an effect. Therefore, tuberculosis skin testing should not be a prerequisite for measles vaccination. The value of protection against natural measles far outweighs the theoretical hazard of possibly exacerbating unsuspected tuberculosis. This may be especially true for travel to certain countries. If desired, tuberculin skin testing may be performed the same day the measles vaccine is administered.

*Formerly called immune serum globulin and immunoglobulin.

Altered Immunity

Replication of live measles vaccine virus may be potentiated in patients with immune deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, generalized malignancy, acquired immune deficiency syndrome (AIDS), and therapy with corticosteroids, alkylating drugs, antimetabolites and radiation. Patients with such conditions should not be given live measles virus vaccine.

■ MENINGOCOCCAL DISEASE

Vaccination against meningococcal disease is not a requirement for entry into any country. Meningococcal disease is endemic throughout the world. Vaccine may be of benefit for some travelers to countries recognized as having epidemic meningococcal disease. Cases in Americans traveling in such areas are rare; however, prolonged contact with the local populace could enhance the risk of infection and make vaccination a reasonable precaution. Serogroup A is the most common cause of epidemics outside the United States, but serogroup C and, on rare occasions, serogroup B, can also cause epidemic disease.

One formulation of meningococcal polysaccharide vaccine is currently available in the United States - quadrivalent A/C/Y/W-135 vaccine*. The only distributor of this vaccine in the United States is Squibb-Connaught. Production of the bivalent vaccine has been discontinued. No vaccine is yet available to offer protection against serogroup B. Meningococcal vaccines are chemically defined antigens consisting of purified bacterial capsular polysaccharides, each inducing serogroup-specific immunity. Serogroup A vaccine has not been shown to be effective in children less than 3 months of age, and may be less than fully effective in children 3-11 months of age. Serogroup C vaccine has not been shown to be effective in children less than 2 years of age. The group Y and W-135 polysaccharides have been shown to be safe and immunogenic in adults; the response of children to these polysaccharides is unknown.

Table 10 provides information on the use of meningococcal vaccine

*Official names: Meningococcal Polysaccharide Vaccine. (Quadrivalent groups A/C/Y/W-135)

TABLE 10. Meningococcal Vaccine

Type of vaccine	Dose	Dose volume*	Comments
Quadrivalent A/C/Y/W-135	Primary: 1	As indicated by manufacturer	Duration of immunity is unknown, but appears to be at least 3 years in those 4 years of age or older. Revaccination after 2 or 3 years should be considered for children first vaccinated at less than 4 years of age who continue to be at high risk.

*For subcutaneous injection

Precautions and Contraindications

Reactions

Adverse reactions to meningococcal vaccine are infrequent and mild, consisting principally of localized erythema which lasts for 1-2 days. Up to 2% of young children develop fever transiently after vaccination.

Pregnancy

The safety of meningococcal vaccines in pregnant women has not been established, although use of the vaccine in pregnant women during an epidemic in Brazil resulted in no adverse effects. On theoretical grounds, it is prudent not to use them unless there is a substantial risk of infection.

■ MUMPS

Mumps is primarily a disease of young, school-age children. Vaccination against mumps is not a requirement for entry into any country. Susceptible children, adolescents, and adults should be vaccinated with a single dose of vaccine* in the volume specified by the manufacturer unless vaccination is contraindicated. Combination with measles and rubella vaccines should be considered. Mumps vaccine can be of particular value for children approaching puberty and for adolescents and adults, particularly males, who have not had mumps. Persons can be considered susceptible unless they have documentation of (1) physician-diagnosed mumps or laboratory evidence of immunity; or (2) adequate immunization with live mumps virus vaccine on or after the first birthday. Most adults are likely to have been infected naturally and generally may be considered immune, even if they did not have clinically recognizable disease. Because there is no evidence that persons who have previously either received the vaccine or had mumps are at any risk of local or systemic reactions from receiving live mumps vaccine, testing for susceptibility before vaccination is unnecessary. See pp 72 for discussion of mumps immunization schedule modifications for infants who will be traveling.

Side Effects and Adverse Reactions

Parotitis after vaccination has been reported rarely. Allergic reactions including rash, pruritis, and purpura have been associated temporally with mumps vaccination but are uncommon, usually mild and of brief duration. Very rarely, manifestations of CNS involvement, such as febrile seizures, unilateral nerve deafness, and encephalitis within 30 days of mumps vaccination, are reported. Almost all have recovered completely.

Precautions and Contraindications

Pregnancy

Although mumps virus is capable of infecting the placenta and fetus, there is no good evidence that it causes congenital malformations in humans. However, because of a theoretical risk to the developing fetus, mumps vaccine should not be give to pregnant women.

*Official name: Mumps Virus Vaccine, Live.

Febrile Illness

Although vaccination of persons with febrile illnesses should be postponed until recovery, minor illnesses such as upper respiratory infections do not preclude vaccination.

Allergies

Live mumps vaccine is produced in chick-embryo cell culture. Persons with a history of anaphylactic reactions (hives, swelling of the mouth and throat, difficulty breathing, hypotension, or shock) subsequent to egg ingestion should be vaccinated only with extreme caution. One investigator has developed special protocols for vaccinating such individuals (J. Pediatr. 1983; 102:196-199). Evidence indicates that persons are not at increased risk if they have egg allergies that are not anaphylactic in nature. Such persons may be vaccinated in the usual manner. There is no evidence to indicate that persons with allergies to chickens or feathers are at increased risk of reaction to the vaccine.

Since mumps vaccine contains trace amounts of neomycin (25 μg), persons who have experienced anaphylactic reactions to topically or systemically administered neomycin should not receive mumps vaccine. A history of contact dermatitis to neomycin is not a contraindication to receiving mumps vaccine. Live mumps virus vaccine does not contain penicillin.

*Recent Administration of Immune Globulin (IG)**

Vaccine should be administered at least 14 days before or deferred for at least 6 weeks, preferably 3 months, after administration of IG because passively acquired antibodies might interfere with the response to the vaccine.

Altered Immunity

Replication of the mumps vaccine virus may be potentiated in patients with immune deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, generalized malignancy, or with therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation. Patients with such conditions should not be given live mumps virus vaccine.

■ PLAGUE

Vaccination against plague is not required by any country as a condition for entry. There is no need to vaccinate persons other than those who are at particularly high risk of exposure because of research activities or certain field activities in epizootic areas. In most of the countries of Africa, Asia, and Americas where plague is reported, the risk of exposure exists primarily in rural mountainous or upland areas. Vaccination is not indicated for most travelers to countries reporting cases, particularly if their travel is limited to urban areas with modern hotel accommodations.

Selective vaccination might be considered for persons who will have direct contact with wild rodents or rabbits in plague-enzootic areas, persons who will reside in plague-enzootic rural areas where avoidance of rodents and fleas is difficult, and laboratory personnel who work regularly with *Yersinia pestis* organisms or plague-infected rodents. Primary and booster vaccinations are summarized in Table 11.

* Formerly called immune serum globulin and immunoglobulin

Reactions

Mild pain, erythema, and side effects such as induration at the injection site occur frequently. With repeated doses, fever, headache, and malaise are more common and tend to be more severe. Sterile abscesses occur rarely. No fatal or disabling complications have been reported.

TABLE 11. Plague Vaccine

Dose	Dose Volume*				Comments
	< 1 year of age	1-4 years of age	5-10 years of age	> 10 years of age	
Primary series:					
1 and 2	0.1 ml	0.2 ml	0.3 ml	0.5 ml	Give doses 1 and 2, 4 or more weeks apart; give dose 3, 4-12 weeks after dose 2
3	0.04 ml	0.08 ml	0.12 ml	0.2 ml	
Booster:	0.04 ml	0.08 ml	0.12 ml	0.2 ml	Give 2 booster doses 6 months apart: thereafter, 1 booster dose at 1-2 year intervals if risk of exposure persists

*For intramuscular injection

■ POLIOMYELITIS

Travelers to countries where poliomyelitis is epidemic or endemic are considered to be at increased risk of poliomyelitis and should be fully immunized. In general, travelers to developing countries should be considered to be at increased risk of exposure to wild poliovirus. A primary series consists of either three doses of trivalent oral polio vaccine (OPV)† or 4 doses of inactivated polio vaccine (IPV)††. Unvaccinated or partially vaccinated travelers should complete a primary series with the vaccine that is appropriate to their age and previous immunization status (see Tables 12 & 13). Persons who have previously received a primary series may need additional doses of a polio vaccine before traveling to areas with an increased risk of exposure to wild poliovirus.

†Official name: Poliovirus Vaccine, Live, Oral, Trivalent

††Official name: Poliomyelitis Vaccine, Inactivated

Children and Adolescents

Trivalent oral polio vaccine (OPV) is the vaccine of choice for all infants, children, and adolescents (up to 18th birthday) if there are no contraindications to vaccination with OPV. Those who have not completed a primary series should do so (Table 12). If time is a limiting factor, at least one dose of OPV should be given. Those who have completed a primary series of OPV should be given a single supplementary dose of OPV. The need for further supplementary doses of OPV has not been established. Those who had the last dose of their primary series of IPV more than 5 years prior to their proposed travel should be given a dose of IPV or OPV. See pp 72 for discussion of polio immunization schedule modifications for infants who will be traveling.

TABLE 12. Poliomyelitis Vaccine (OPV)

Doses	Number of Doses	Comments
Primary series	3(OPV)	Give doses 1 and 2, 6-8 weeks apart; give dose 3 at least 6 weeks after dose 2, customarily given 8-12 months after dose 2.
Supplementary	1(OPV)	Give dose 4 to children 4-6 years. Give a supplementary dose to children and adults when at increased risk.

Adults

Unvaccinated or unknown immunization status

For unvaccinated adults and adults whose immunization status is unknown who are traveling to countries in which the risk of exposure to wild polio virus is increased, primary immunization with inactivated polio vaccine (IPV) is recommended whenever this is feasible (Table 13). IPV is preferred because the risk of vaccine-associated paralysis following OPV is slightly higher in adults than in children.

At least three doses of IPV should be given before departure. In circumstances where time does not permit this to be done, the following alternatives are recommended:

1. If less than 8, but more than 4 weeks are available before protection is needed, 2 doses of IPV should be given at least 4 weeks apart.
2. If less than 4 weeks are available before protection is needed, a single dose of OPV is recommended.

In both instances the remaining doses of vaccine should be given later, at the recommended intervals, if the person remains at increased risk.

Previously received less than full primary course of OPV or IPV

Adults who are at increased risk of exposure to poliomyelitis and who have previously received less than a full primary course of OPV or IPV should be given the remaining required doses of either vaccine, regardless of the interval since the last dose and of the type of vaccine previously received.

TABLE 13. Poliomyelitis Vaccine (IPV)

Doses	Number of Doses	Dose Volume	Comments
Primary series	4(IPV)	As indicated by manufacturer	Give doses 1, 2, and 3, 1-2 months apart; give dose 4, 6-12 months after dose 3.
Supplementary	1(IPV)		Give dose at 5 year intervals up to 18 years of age. Give supplementary dose to adults when at increased risk.

Previously received complete series of OPV

Adults who are at increased risk of exposure to poliomyelitis and who have previously completed a primary series of OPV should be given another dose of OPV. The need for further supplementary doses of OPV has not been established.

Previously received complete series of IPV

Adults who previously completed a primary series of IPV may be given a dose of either IPV or OPV. If IPV is used exclusively, additional doses may be given every 5 years if the person remains at increased risk, but the need for these additional doses has not been established.

Side Effects and Adverse Reactions

In rare instances, administration of OPV has been associated with paralysis in healthy recipients and their contacts. Although this risk is extremely small for vaccinees and their susceptible, close contacts, they should be informed of this risk. No serious side effects of the currently available IPV have been documented. Since IPV contains trace amounts of streptomycin and neomycin, persons with a history of an anaphylactic reaction following receipt of these antibiotics should not receive IPV. Persons with a history of reactions that are not anaphylactic are not at increased risk and can be vaccinated.

Precautions and Contraindications

Pregnancy

There is no convincing evidence of adverse effects of either OPV or IPV in pregnant women or developing fetuses; regardless, it is prudent on theoretical grounds to avoid vaccinating pregnant women. However, if immediate protection against poliomyelitis is needed OPV, not IPV, is recommended.

Altered Immunity

Patients with immune-deficiency diseases should not be given OPV because of their substantially increased risk of vaccine-associated disease. Furthermore, patients with altered immune states due to diseases or to therapy, and the household

contacts of these patients, should not receive OPV. This is because of the theoretical risk of paralytic disease in immunocompromised patients; IPV is recommended for these patients and their household contacts. Likewise, OPV should not be given to a member of a household in which there is a history of congenital or hereditary immunodeficiency unless the potential recipient and other household members are known to be immunocompetent. Although a protective immune response to IPV in the immunodeficient patient cannot be assured, the vaccine is safe and some protection may result from its administration. If OPV is inadvertently administered to a household-type contact of an immunodeficient patient, close contact between the patient and the recipient of OPV should be avoided for approximately 1 month after vaccination. This is the period of maximum excretion of vaccine virus.

■ RABIES

Travelers to rabies endemic countries should be warned about the risk of acquiring rabies outside the United States. Rabies vaccination is not a requirement for entry into any country. Rabies is almost always transmitted by bites which introduce the virus into wounds. Very rarely, rabies has been transmitted by nonbite exposures which introduce the virus into open cuts or mucous membranes. Any animal bite or scratch demands prompt local treatment. When wounds are thoroughly cleansed with copious amounts of soap and water, the risk of rabies is significantly reduced. Persons who are potentially exposed to rabies should contact local health authorities immediately for advice about postexposure prophylaxis and, upon returning to the United States should contact their physician or State Health Department.

Preexposure vaccination with human diploid cell rabies vaccine (HDCV) is recommended for persons in high-risk groups such as persons living in or visiting countries (for more than 30 days) where rabies is a constant threat, and for most veterinarians, animal handlers, spelunkers, and certain laboratory workers. Preexposure prophylaxis may provide protection for persons with inapparent exposure to rabies and for those whose postexposure therapy might be delayed. **It does not eliminate the need for additional therapy after a rabies exposure** but simplifies postexposure treatment by eliminating the need for rabies immune globulin (RIG) and by decreasing the number of doses of vaccine required. This is of particular importance for persons at high risk of being exposed in countries where the available rabies immunizing products may carry a higher risk of adverse reactions.

Table 14 lists countries which have reported no cases of rabies during the most recent two-year period for which information is available (formerly referred to as "rabies free countries"). Additional information can be obtained from local health authorities of the country, the embassy, or the local consulate general's office in the United States.

Table 15 provides information on preexposure and postexposure prophylaxis. Routine serologic testing is not necessary for persons who receive the recommended preexposure or postexposure regimen with HDCV. Persons previously vaccinated with vaccines other than HDCV should receive the complete postexposure regimen with HDCV unless they developed a laboratory confirmed antibody response to the primary vaccination. Serologic testing is still recommended for persons whose immune response might be diminished by drug therapy or by diseases.

Rabies preexposure prophylaxis is rarely indicated for travelers to the countries listed in Table 14, and postexposure treatment is rarely necessary after exposures to terrestrial animals in these countries.

TABLE 14. Countries Reporting No Cases of Rabies

The following countries and political units stated that rabies was not present:

AFRICA:	Mauritius*.
AMERICAS:	**North:** Bermuda; St. Pierre and Miquelon.
	Caribbean: Anguilla; Antigua and Barbuda; Bahamas; Barbados; Cayman Islands; Dominica; Guadeloupe; Jamaica; Martinique; Montserrat; Netherlands Antilles (Aruba, Bonaire, Curacao, Saba, St. Maarten, and St. Eustatius); St. Christopher (St. Kitts) and Nevis; St. Lucia; St. Martin; St. Vincent; Turks and Caicos Islands; Virgin Islands (U.K. and U.S.).
	South: Suriname; Uruguay.
ASIA:	Bahrain; Brunei Darussalam; Japan; Kuwait; Malaysia (Malaysia-Sabah*); Maldives*; Oman*; Singapore; Taiwan.
EUROPE:	Bulgaria*; Faroe Islands; Iceland; Ireland; Malta; Norway; Spain; Sweden; United Kingdom.
OCEANIA:	American Samoa; Australia; Belau (Palau); Cook Islands; Federated States of Micronesia (Kosrae, Ponape, Truk, and Yap); Fiji; French Polynesia; Guam; Kiribati; New Caledonia; New Zealand; Niue; Northern Mariana Islands; Papua New Guinea; Samoa; Solomon Islands; Tonga; Vanuatu.

Most of Pacific Oceania is "rabies-free." For information on specific islands not listed above, contact the Centers for Disease Control, Division of Quarantine.

*Countries that have only recently reported no cases of rabies; these classifications should be considered provisional.

This revised list is based on data from the following publications and information provided to the Centers for Disease Control (CDC):

(1) World Health Organization: *World Survey of Rabies XXI* (for years 1982/83); Veterinary Public Health Unit, Division of Communicable Diseases, WHO, Geneva, 1985.

(2) WHO Collaborating Centre for Rabies Surveillance and Research: *Rabies Bulletin Europe*, 3/85 (July-September, 1985), Vol 9, No. 3, 1985.

(3) Pan American Zoonoses Center (PAHO/WHO): *Epidemiological Surveillance of Rabies for the Americas* (3rd and 4th quarters, 1984, Vol XVI, No. 1-6, November 11, 1985).

TABLE 15. Rabies Immunization

I. PREEXPOSURE IMMUNIZATION. Preexposure immunization consists of three doses of HDCV, 1.0 ml, IM (i.e., deltoid area), one each on days 0, 7, and 28. HDCV may be administered to travelers by the intradermal (ID) dose/route (0.1 ml ID on days 0, 7, and 21 or 28) if the 3-dose series is completed 30 days or more before departure. If this is not possible, the IM dose/route should be used. Administration of routine booster doses of vaccine depends on exposure risk category as noted below. Preexposure immunization of immunosuppressed persons is not recommended.

Criteria for Preexposure Immunization

Risk category	Nature of risk	Typical populations	Preexposure regimen
Continuous	Virus present continuously, often in high concentrations. Aerosol, mucous membrane, bite, or nonbite exposure possible. Specific exposures may go unrecognized.	Rabies research lab workers* Rabies biologics production workers.	Primary preexposure immunization course. Serology every 6 months. Booster immunization when antibody titer falls below acceptable level.*
Frequent	Exposure usually episodic with source recognized, but exposure may also be unrecognized. Aerosol, mucous membrane, bite, or nonbite exposure.	Rabies diagnostic lab workers*, spelunkers, veterinarians, and animal control and wildlife workers in rabies epizootic areas. Certain travelers to foreign rabies epizootic areas.	Primary preexposure immunization course. Booster immunization or serology every 2 years.†
Infrequent (greater than population-at-large)	Exposure nearly always episodic with source recognized. Mucous membrane, bite, or nonbite exposure.	Veterinarians and animal control and wildlife workers in areas of low rabies endemicity. Veterinary students.	Primary preexposure immunization course. No routine booster immunization or serology.
Rare (population-at-large)	Exposure always episodic, mucous membrane, or bite with source recognized.	U.S. population-at-large, including individuals in rabies-epizootic areas.	No preexposure immunization.

II. POSTEXPOSURE IMMUNIZATION. All postexposure treatment should begin with immediate thorough cleansing of all wounds with soap and water.

Persons not previously immunized:
RIG, 20 I.U./kg body weight, one half infiltrated at bite site (if possible), remainder IM; 5 doses of HDCV, 1.0 ml IM (i.e., deltoid area), one each on days 0, 3, 7, 14 and 28.

Persons previously immunized§:
Two doses of HDCV, 1.0 ml, IM (i.e., deltoid area), one each on days 0 and 3. RIG should not be administered.

*Judgement of relative risk and extra monitoring of immunization status of laboratory workers is the responsibility of the laboratory supervisor (see U.S. Department of Health and Human Service's *Biosafety in Microbiological and Biomedical Laboratories*, 1984).

†Preexposure booster immunization consisits of one dose of HDCV, 1.0 ml/dose, IM (deltoid area). Acceptable antibody level is 1:5 titer (complete inhibition in RFFIT at 1:5 dilution). Boost if titer falls below 1:5.

§Preexposure immunization with HDCV; prior postexposure prophylaxis with HDCV; or persons previously immunized with any other type of rabies vaccine *and* a documented history of positive antibody response to the prior vaccination.

Chloroquine phosphate (administered for malaria chemoprophylaxis) and other unknown factors encountered by persons traveling to developing countries may interfere with the antibody response to HDCV. The intramuscular (IM) dose/route of preexposure prophylaxis, however, provides a sufficient margin of safety in this setting. HDCV should not be administered by the intradermal (ID) dose/route when chloroquine or other drugs which may interfere with the immune response are being used. For international travelers, the ID dose/route should be initiated early, to allow the three dose series to be completed 30 days or more before departure; otherwise the IM dose/route should be used.

Precautions and Contraindications

Reactions after vaccination with HDCV

Persons may experience local reactions such as pain, erythema, and swelling or itching at the injection site, or mild systemic reactions, such as headache, nausea, abdominal pain, muscle aches, and dizziness. Approximately 6% of persons receiving booster vaccinations experience an immune complex-like reaction characterized by urticaria, pruritis, and malaise. Once initiated, rabies postexposure prophylaxis should not be interrupted or discontinued because of local or mild systemic reactions to rabies vaccine.

Pregnancy

Pregnancy is not a contraindication to postexposure prophylaxis.

Age

In infants and children, the dose of HDCV for preexposure or postexposure prophylaxis is the same as that recommended for adults. The dose of RIG for postexposure prophylaxis is based on body weight (Table 15).

■ RIFT VALLEY FEVER

Rift Valley Fever (RVF) is a viral disease that affects primarily livestock and humans. It is transmitted by several means including mosquitoes, and percutaneous inoculation or inhalation of aerosols from contaminated blood or fluids of infected animals. The risk of RVF infection to persons who travel to endemic areas is considered to be low. Travelers, however, can reduce the risk of exposure by avoiding contact with livestock and minimizing exposure to mosquito bites. No commercial vaccine is available for immunization of persons against RVF.

■ RUBELLA

Rubella infection may be associated with significant morbidity in adults and is associated with a high rate of fetal wastages or anomalies if contracted in the early months of pregnancy. The risk of exposure to rubella outside the United States may be high. Therefore, although vaccination against rubella is not a requirement for entry into any country, all travelers, particularly women of childbearing age, should be immune to rubella. Persons should be considered to be susceptible to rubella unless they have documentation of (1) previous vaccination on or after the first birthday or (2) laboratory evidence of immunity. A single dose of rubella virus vaccine* is recommended for all susceptible children, adolescents, and

*Official name: Rubella Virus Vaccine, Live.

adults, particularly females, unless vaccination is contraindicated. Because there is no evidence that persons who have previously either received the vaccine or had rubella are at any risk of local or systemic reactions from receiving live rubella vaccine, testing for susceptibility before vaccination is unnecessary. See pp 72 for discussion of rubella immunization schedule modifications for infants who will be traveling.

Side Effects and Adverse Reactions

Children sometimes have vaccine side effects such as low-grade fever, rash, and lymphadenopathy. Arthralgia and transient arthritis occur more frequently and tend to be more severe for susceptible women than children. Transient peripheral neuritic complaints, such as paresthesias and pain in the arms and legs have occurred rarely. There is no increased risk of these reactions for persons who are already immune when vaccinated. The vaccine virus is not transmitted to pregnant, susceptible contacts.

Precautions and Contraindications

Pregnancy

Rubella vaccine should not be given to women known to be pregnant because its safety for the developing fetus is not fully known. If a pregnant woman is vaccinated, or if she becomes pregnant within 3 months of vaccination, she should be counseled on the theoretical risks to the fetus. The Immunization Practices Advisory Committee believes that the risk of vaccine-associated malformations is so small as to be negligible. Rubella vaccination during pregnancy should not ordinarily be a reason to routinely recommend interruption of pregnancy although the final decision rests with the individual patient and her physician.

Febrile Illness

Although vaccination of persons with febrile illness should be postponed until recovery, minor illnesses such as upper respiratory infections do not preclude vaccination.

Allergies

Hypersensitivity reactions very rarely follow the administration of live rubella vaccine. Most of these reactions are considered minor. Live rubella vaccine is produced in human diploid cell culture. Consequently, a history of an anaphylactic reaction to egg ingestion needs to be taken into consideration only if measles or mumps antigen are to be included with rubella vaccine.

Since rubella vaccine contains trace amounts of neomycin (25 μg), persons who have experienced anaphylactic reactions to topically or systemically administered neomycin should not receive rubella vaccine. A history of contact dermatitis to neomycin is not a contraindication to receiving rubella vaccine. Live rubella vaccine does not contain penicillin.

*Recent Administration of Immune Globulin (IG)**

Vaccination should be administered at least 14 days before or deferred for at least 6 weeks, preferably 3 months, after administration of IG because passively acquired antibodies might interfere with the response to the vaccine.

*Formerly called immune serum globulin and immunoglobulin.

Altered Immunity

Replication of live rubella vaccine virus may be potentiated in patients with immune deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, generalized malignancy, and therapy with corticosteroids, alkylating drugs, antimetabolites, and radiation. Patients with such conditions should not be given live rubella virus vaccine.

■ SCHISTOSOMIASIS

Schistosomiasis, an infection estimated to occur worldwide among some 200 million people, is caused by flukes whose complex life cycles utilize specific fresh water snail species as intermediate hosts. Infected snails release large numbers of minute free-swimming larvae (cercariae) which are capable of penetrating the unbroken skin of the human host. The risk of becoming infected and the intensity of infection is a function of the frequency and degree of water contact. Exposure to schistosomiasis is a health hazard for U.S. citizens who travel to endemic areas of the Caribbean, South America, Africa and Asia. Those at greatest risk are travelers who engage in wading or swimming in fresh water in rural areas where poor sanitation and appropriate snail hosts are present.

Clinical manifestations of acute infection can ensue as early as 2-3 weeks after water exposure. The most common acute symptoms are: fever, lack of appetite, weight loss, abdominal pain, weakness, headaches, joint and muscle pain, diarrhea, nausea and cough. Rarely, the central nervous system can be involved. Chronic infections, often asymptomatic in the early stages, can cause disease of the lung, liver, intestines, and/or bladder. Diagnosis of infection is usually confirmed by finding schistosome eggs on microscopic examination of stool and urine. Eggs can be found 6-8 weeks after exposure. Safe and effective oral drugs are available for treatment of schistosomiasis.

Since there is no practical way for the traveler to distinguish infested from non-infested water, fresh water swimming in rural areas of endemic countries should be avoided. In such areas heating bathing water to 50° C (122° F) for five minutes or treating it with iodine or chlorine in a manner similar to the precautions recommended for preparing drinking water will destroy cercariae and make the water safe. Filtering water with a light woven cloth or with paper coffee filters may also be effective in removing cercariae from bathing water. If these measures are not feasible, allowing bathing water to stand for three days is advisable since cercariae survive only 48 hours. If accidental exposure to suspected water occurs, immediate and vigorous towel drying or rapid application of rubbing alcohol to the exposed areas will reduce the risk of infection. At this time there are no available drugs which are known to be effective as chemoprophylactic agents.

■ SMALLPOX

In May 1980, the World Health Organization (WHO) declared the global eradication of smallpox. There is no evidence of smallpox transmission anywhere in the world. The last reported case of endemic smallpox occurred in Somalia in October 1977, and the last reported case of laboratory-acquired smallpox occurred in the United Kingdom in 1978. WHO amended the International Health Regulations January 1, 1982, deleting smallpox from the diseases subject to the Regulations.

Smallpox vaccination should* not *be given for international travel. The risk from smallpox vaccination, although very small, now exceeds the risk of smallpox; consequently, smallpox vaccination of civilians is indicated **only *for laboratory workers directly involved with smallpox or closely related (orthopox) viruses, e.g., monkeypox, vaccinia, and others.***

Misuse of Smallpox Vaccine

Smallpox vaccine should never be used therapeutically. There is no evidence that vaccination has therapeutic value in the treatment of recurrent herpes simplex infection, warts, or any other disease.

■ TETANUS (See Diphtheria, Tetanus, and Pertussis)

■ TUBERCULOSIS

In many countries tuberculosis is much more common than in the United States, but it is not a major hazard to U.S. travelers. To become infected, a person usually would have to spend a long time in a closed environment where the air was contaminated by a person with untreated tuberculosis who is coughing and has numerous organisms in secretions from the lungs. Tuberculosis infection is generally transmitted through the air; therefore, there is virtually no danger of its being spread by dishes, linens, and items that are touched, or by food; however, it can be transmitted through unpasteurized milk or milk products.

A traveler who anticipates possible prolonged exposure to tuberculosis should have a tuberculin skin test before leaving and, if negative, a repeat test after returning to the United States. Travelers who already have a significant tuberculin reaction are unlikely to be reinfected. Persons who are infected or who become infected can be treated to prevent tuberculosis. Travelers who suspect that they have been exposed to tuberculosis should inform their physician of the possible exposure.

■ TYPHOID FEVER

Typhoid vaccination is not required for international travel, but it is recommended for travelers to areas where there is a recognized risk of exposure to *Salmonella typhi*, the organism which causes typhoid fever. *Salmonella typhi* is transmitted by contaminated food and water and is prevalent in many countries of Africa, Asia, and Central and South America. Vaccination is particularly recommended for travelers who will have prolonged exposure to potentially contaminated food and water in smaller cities and villages or rural areas off the usual tourist itineraries.

Several different preparations of typhoid vaccine have been shown to protect 70%-90% of recipients, depending in part on the degree of subsequent exposure. However, even travelers who have been vaccinated should use caution in selecting food and water.

Tables 16 and 17 provide information on dosage.

When there is insufficient time for 2 doses at the interval specified, 3 doses of the same volumes (listed in the table) at weekly intervals may be administered, al-

TABLE 16. Typhoid Vaccine

Doses	Dose volume*		Comments
	< 10 years of age	⩾ 10 years of age	
Primary series: 1 and 2	0.25 ml	0.50 ml	Give 4 or more weeks apart
Booster	0.25 ml	0.50 ml	1 dose every 3 years

*For subcutaneous injection

TABLE 17. Typhoid Vaccine Booster Immunization-Intradermal Route

Doses	Dose volume*		Comments†
	6 months-10 years of age	⩾ 10 years of age	
Booster	0.1 ml	0.1 ml	1 dose at least every 3 years under conditions of continued or repeated exposure

*For intradermal injection

†Generally less reaction follows vaccination by the intradermal route, except when acetone-killed and dried vaccine is used. (Acetone-killed and dried vaccine should not be given intradermally.)

though it is recognized that this schedule may be less effective. See pp 73 for discussion of typhoid immunization for infants who will be traveling.

Contraindications

Information is not available on the safety of the vaccine during pregnancy; therefore, it is prudent on theoretical grounds to avoid vaccinating pregnant women.

Reactions

Typhoid vaccination often results in discomfort at the site of injection for 1-2 days. The local reaction may be accompanied by fever, malaise, and headache.

Typhoid and Paratyphoid A and B Vaccines

The effectiveness of paratyphoid A vaccine has never been established, and field trials have shown that usually small amounts of paratyphoid B antigens contained in vaccines combining typhoid and paratyphoid A and B antigens ("TAB" vaccines) are not effective. Knowing this and recognizing that combining paratyphoid A and B antigens with typhoid vaccine increases the risk of vaccine reaction, typhoid vaccine should be used alone.

■ TYPHUS FEVER

Vaccination against typhus is not required by any country as a condition for entry. Only in mountainous highlands or in areas where a cold climate and other local conditions favor louse infestation does a potential threat exist. Cases of epidemic typhus are generally reported from mountainous regions of Mexico, Central and South America, the Balkans, Eastern Europe, Africa, and Asia. Even in these places, however, the risk of typhus for American travelers is extremely low, and treatment with tetracycline or chloramphenicol is curative. No typhus cases are known to have occurred in an American traveler since 1950.

Production of typhus vaccine in the United States has been discontinued and currently there are no plans for commercial production of new vaccine.

■ YELLOW FEVER

Urban and jungle yellow fever usually occur only in parts of Africa and South America. Urban yellow fever is an epidemic viral disease of humans transmitted from infected to susceptible persons by the *Aedes aegypti* mosquito. Jungle yellow fever is an enzootic viral disease transmitted among nonhuman primate hosts by a variety of mosquito vectors.

Vaccination

Vaccination with yellow fever vaccine* and a completed International Certificate of Vaccination are required for travel to certain countries as a condition for entry. A few countries in Africa require evidence of vaccination from all entering travelers. A number of countries require a certificate from travelers arriving from infected areas or from countries with infected areas. Some countries in Africa and French Guiana in South America waive the requirements for travelers coming from non-infected areas and staying less than 2 weeks. Some countries consider former yellow fever endemic zones (see maps on pp 115-116) as infected areas and require a certificate from travelers arriving from countries in these areas.

Yellow fever vaccination is also recommended for travelers who will go outside the urban areas of countries where there is probable or recognized current yellow fever transmission (see countries with asterisks in Vaccinations Required and Information On Malaria Risk and Prophylaxis, By Country, pp 15-57). Yellow fever immunization is also recommended for laboratory workers who may be exposed to virulent yellow fever virus.

To be acceptable for purposes of international travel, the yellow fever vaccine must be approved by WHO and administered at a designated Yellow Fever Vaccination Center. Each State Health Department designates yellow fever vaccination centers within their jurisdiction; CDC does not maintain a listing of the designated centers. Travelers should be advised to call their local health department for information on centers in their area.

Table 18 provides information on dosage.

Precautions and Contraindications

Age

Infants under 6 months of age are more susceptible to serious adverse reactions (encephalitis) than older children. See pp 73 for discussion of yellow fever immunization for infants who will be traveling.

*Official name: Yellow Fever Vaccine.

TABLE 18. Yellow Fever Vaccine

Doses	Dose Volume	Comments
	> 6 months of age	
Primary: 1	0.5 ml	
Booster:	0.5 ml	1 dose every 10 years

Pregnancy

Although specific information is not available concerning adverse effects of yellow fever vaccine on the developing fetus, it is prudent on theoretical grounds to avoid vaccinating pregnant women and to postpone travel to areas where yellow fever is present until after delivery. Pregnant women who *must* travel to high risk areas, where they cannot adequately protect themselves from exposure to mosquitoes, should be vaccinated.

Altered Immune States

Infection with yellow fever vaccine virus poses a theoretical risk to patients with leukemia, lymphoma, or generalized malignancy or to those whose immunologic responses are suppressed by corticosteroids, alkylating drugs, antimetabolites, or radiation. Short-term (less than 2 weeks) corticosteroid therapy or intra-articular, bursal, or tendon injections with corticosteroids should not be immunosuppressive and constitute no increased hazard to recipients of yellow fever vaccine.

Hypersensitivity

Live yellow fever vaccine is produced in chick embryos and should not be given to persons clearly hypersensitive to eggs; generally, persons who are able to eat eggs or egg products may receive the vaccine.

If vaccination of an individual with a questionable history of egg hypersensitivity is considered essential because of a high risk of exposure, an intradermal test dose may be administered under close medical supervision. Specific directions for skin testing are found in the package insert.

Some countries with no known yellow fever activity but which require vaccination will waive the requirement for children under 1 year of age and for persons with the conditions listed above if they possess a signed statement from a physician indicating that vaccination is contraindicated for health reasons. While it is best to check with the embassy or local consulate general of the country before traveling, this procedure has been widely accepted.

Reactions

Reactions to yellow fever vaccine are generally mild. Five to 10% of vaccinees have mild headache, myalgia, low-grade fever, or other minor symptoms 5-10 days after vaccination.

Simultaneous Administration of Other Vaccines and Drugs

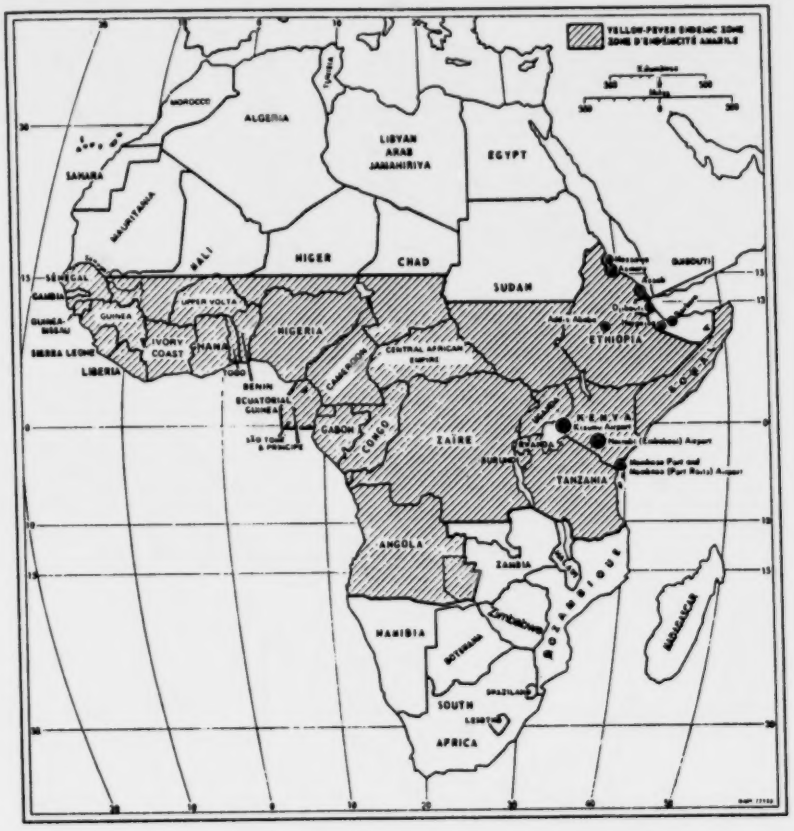
Determination of whether to administer yellow fever vaccine and other immunobiologic agents simultaneously should be made on the basis of convenience to the traveler in completing the desired immunizations before travel and on information regarding possible interference.

The serologic response to yellow fever vaccine is not inhibited by administration of certain other vaccines concurrently or at various intervals. Additionally, severity of reactions to vaccination was not amplified by concurrent administration of yellow fever and other live virus vaccines. Unless there are time constraints, cholera and yellow fever vaccines should be administered at an interval greater than 3 weeks. If the vaccines cannot be administered at least 3 weeks apart then they should be given simultaneously.

A recent study of persons given yellow fever vaccine and 5 ml of commercially available immune globulin revealed no alteration of the immunologic response to yellow fever vaccine. Chloroquine inhibits yellow fever virus replication *in vitro*. However, when yellow fever vaccine was administered simultaneously with the first dose in a weekly regimen of chloroquine prophylaxis for malaria, the antibody response did not differ significantly from vaccine recipients who did not take chloroquine.

YELLOW FEVER ENDEMIC ZONES

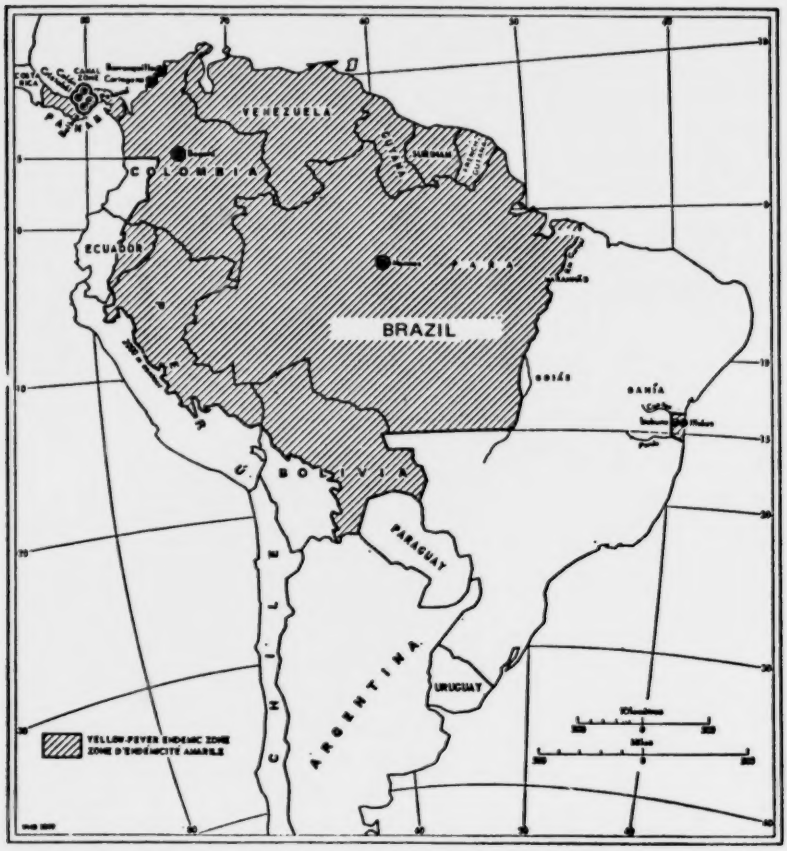
IN AFRICA



NOTE: Although the "yellow fever endemic zones" are no longer included in the International Health Regulations, a number of countries (most of them being not bound by the Regulations or bound with reservations) consider these zones as infected areas and require an International Certificate of Vaccination against Yellow Fever from travelers arriving from those areas. The above map based on information from WHO is therefore included in this publication for practical reasons.

YELLOW FEVER ENDEMIC ZONES

IN THE AMERICAS



NOTE: Although the "yellow fever endemic zones" are no longer included in the International Health Regulations, a number of countries (most of them being not bound by the Regulations or bound with reservations) consider these zones as infected areas and require an International Certificate of Vaccination against Yellow Fever from travelers arriving from those areas. The above map based on information from WHO is therefore included in this publication for practical reasons.

GEOGRAPHICAL DISTRIBUTION OF POTENTIAL HEALTH HAZARDS TO TRAVELERS

GEOGRAPHICAL DISTRIBUTION OF POTENTIAL HEALTH HAZARDS TO TRAVELERS

This section is intended to give a *broad* indication of the health risks to which some travelers may be exposed in various areas of the world and which they may not encounter in the usual place of residence.

In practice, to identify areas accurately and define the degree of risk likely in each of them is extremely difficult, if not impossible. For example, viral hepatitis A is ubiquitous but the risk of infection varies not only according to area but also according to eating habits; hence, there may be more risk from communal eating in an area of low incidence than from eating in a private home in an area of high incidence. Again, in the case of cholera, the state of health of the individual is an important factor; a person in good health traveling in areas with a high incidence of cholera and taking no precautions may never contract the disease; on the other hand, persons with achlorhydria are much more susceptible. Generalizations may therefore be misleading.

Another factor is that tourism is an important source of income for many countries and to label specific areas as being of high risk for a disease may be misinterpreted. But this does not absolve national health administrations from their responsibility to provide an accurate picture of the risks from communicable diseases that may be encountered in various parts of their country.

AFRICA

Northern Africa (Algeria, Egypt, Libyan Arab Jamahiriya, Morocco, and Tunisia) is characterized by a generally fertile coastal area and a desert hinterland with oases that are often foci of infections.

Arthropod-borne diseases are unlikely to be a major problem to the traveler; however, dengue fever, filariasis (focally in the Nile Delta), leishmaniasis, malaria, relapsing fever, Rift Valley fever (in the east), sandfly fever, and typhus do occur. Small foci of plague have been reported in the Libyan Arab Jamahiriya.

Foodborne and waterborne diseases are endemic; the dysenteries and other diarrheal diseases are particularly common. Typhoid fevers and viral hepatitis, type A, are common in some areas. Schistosomiasis (bilharziasis) is very prevalent in the Nile Delta area in Egypt and in the Nile valley areas; it occurs focally in other countries in the area. Alimentary helminthic infections, brucellosis, and giardiasis are common. Echinococcosis (hydatid disease) may occur.

Other hazards include poliomyelitis, trachoma, rabies, scorpion stings, and snake bite.

Sub-Saharan Africa (Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Djibouti, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Reunion, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Togo, Uganda, United Republic of Tanzania, Zaire, Zambia, and Zimbabwe). In this area, entirely within the tropics, the vegetation

varies from the tropical rain forests of the west and center to the wooded steppes of the east, and from the desert of the north through the Sahel and Sudan savannas to the moist orchard savanna and woodlands north and south of the equator.

Many of the diseases listed below occur in localized rural foci. They are mentioned so that the international traveler and the medical practitioner concerned may be aware of the diseases that may occur.

Arthropod-borne diseases are a major cause of morbidity. Malaria in the severe falciparum, or malignant, form occurs throughout the area, except at over 3,000 meters altitude and in the islands of Mauritius (vivax malaria only), Reunion, and Seychelles. Various forms of filariasis are widespread; endemic foci of onchocerciasis, or river blindness, exist in all the countries listed except in the greater part of Kenya and in Djibouti, the Gambia, Mauritania, Mozambique, Somalia, Zimbabwe, and the island countries of the Atlantic and Indian Oceans. Both cutaneous and visceral leishmaniasis may be found, particularly in the drier areas. Human trypanosomiasis (sleeping-sickness), mainly in small isolated foci, is reported from all countries except Djibouti, Mauritania, Somalia, and the island countries of the Atlantic and Indian Oceans. Relapsing fever and louse-, flea-, and tick-borne typhus occur. Small foci of plague have been reported from Kenya, Madagascar, Mozambique, the United Republic of Tanzania, and Zaire. Tungiasis is widespread in western Africa. Many arthropod-borne virus diseases, including yellow fever, are endemic, with only scattered cases being reported and, from time to time, more extensive outbreaks.

Foodborne and waterborne diseases are highly endemic. Schistosomiasis (bilharziasis) is present throughout the area except in Cape Verde, Reunion, and the Seychelles. Alimentary helminthic infections, the dysenteries and diarrheal diseases, giardiasis, typhoid fever, and viral hepatitis are widespread. Guinea-worm infection occurs in isolated foci.

Poliomyelitis is endemic in most countries except in Mauritius, Reunion, and the Seychelles. Trachoma is widespread. Among other diseases, certain, frequently fatal, arenavirus haemorrhagic fevers have attained notoriety. Certain arenavirus hemorrhagic fevers, frequently fatal, have occurred. Lassa fever has a virus reservoir in a commonly found multimammate rat. Studies have shown that a reservoir exists in some rural areas of West Africa; people visiting these areas should take particular care to avoid rat-contaminated food or food containers, but the extent of the disease should not be exaggerated. The animal reservoirs of Ebola and Marburg fevers have not yet been identified. Echinococcosis (hydatid disease) is widespread in animal-breeding areas.

Epidemics of meningococcal meningitis may occur throughout tropical Africa, particularly in the savanna areas during the dry season.

Other hazards include rabies and snake bites.

Southern Africa (Botswana, Lesotho, Namibia, St. Helena, South Africa, and Swaziland) varies physically from the Namib and Kalahari deserts to fertile plateau and plains and to the more temperate climate of the southern coast.

Arthropod-borne diseases such as malaria, plague, relapsing fever, Rift Valley fever, tick-bite fever, and typhus, mainly tick-borne, have been reported from most of this area except St. Helena, but except for malaria in certain areas, they are

not likely to be a major health problem for the traveler. Trypanosomiasis (sleeping sickness) may occur in Botswana and Namibia; sporadic cases have been reported from northern Transvaal in South Africa.

Foodborne and waterborne diseases are common in some areas, particularly amebiasis and typhoid fever. Schistosomiasis (bilharziasis) is common in the northern and eastern parts of South Africa.

Snakes may be a hazard in some areas.

THE AMERICAS

North America (Bermuda, Canada, Greenland, St. Pierre and Miquelon, and the United States of America) extends from the Arctic to the subtropical cays of the southern USA.

The incidence of communicable diseases is such that they are unlikely to prove a hazard for international travelers greater than that found in their own country. There are, of course, health risks but in general, the precautions required are minimal. Plague, rabies in wildlife and bats, Rocky Mountain spotted fever, tularemia, and arthropod-borne encephalitis occasionally occur. Other hazards include poisonous snakes, poison ivy, and poison oak. In the north, a serious hazard is the very low temperature in the winter.

The USA is attempting to eliminate measles and children entering school are required to produce evidence of immunity to the disease.

Mainland Middle America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama) ranges from the deserts of the north to the tropical rain forests of the south-east.

Of the *arthropod-borne* diseases, malaria exists in all of the countries, but in Costa Rica and Panama it is confined to a few areas and in Mexico, mainly to the west coast. Cutaneous and mucocutaneous leishmaniasis occur in all of the countries. Onchocerciasis (river blindness) is found in two small foci in the south of Mexico and four dispersed foci in Guatemala. American trypanosomiasis (Chagas' disease) has been reported to occur in localized foci in rural areas in all of these countries. Dengue fever and Venezuelan equine encephalitis may occur. There is a risk of acquiring dengue fever in some areas of Mexico, especially during the months of July, August, and September.

The *foodborne and waterborne* diseases, including amebic and bacillary dysenteries and other diarrheal diseases, and typhoid fever are very common throughout the area, but cholera has not yet, during the current pandemic, occurred here, nor in the Caribbean or South America. Viral hepatitis occurs throughout the area. Helminthic infections are common. Paragonimiasis (oriental lung fluke) has been reported in Costa Rica and Panama. Brucellosis occurs in the northern part of the area. Many *Salmonelli typhi* infections from Mexico and *Shigella dysenteriae* type 1 infections from mainland Middle America as a whole have been caused by drug-resistant enterobacteria.

Poliomyelitis is reported from all countries except Costa Rica and Panama. Rabies in animals (usually dogs and bats) is widespread throughout the area. Snakes may be a hazard in some areas.

Caribbean Middle America (Antigua and Barbuda, Bahamas, Barbados, British Virgin Islands, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, Puerto Rico, St. Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Turks and Caicos Islands, and the Virgin Islands (USA)). The islands, a number of them mountainous with peaks 1000-2500 m high, have an equable tropical climate with heavy rain storms and high winds at certain times of the year.

Of the *arthropod-borne* diseases, malaria occurs in endemic form only in Haiti and in the western part of the Dominican Republic; elsewhere it has been eradicated. Cutaneous leishmaniasis was recently discovered in the Dominican Republic. Bancroftian filariasis occurs in Haiti and some other islands and other filariases may occasionally be found. Outbreaks of dengue fever occur throughout the area; dengue haemorrhagic fever has also occurred. Tularemia has been reported from Haiti. Yellow fever may occur in Trinidad and Tobago.

Of the *foodborne and waterborne* diseases, bacillary and amebic dysenteries are common and viral hepatitis is reported, particularly in the northern islands. Schistosomiasis (bilharziasis) is endemic in the Dominican Republic, Guadeloupe, Martinique, Puerto Rico, and Saint Lucia, in each of which control operations are in progress, and it may also occur sporadically in other islands.

Most of the islands are free of poliomyelitis, but it is still endemic in the Dominican Republic and Haiti. *Other hazards* may occur from spiny sea urchins and coelenterates (coral and jellyfish) and snakes. Animal rabies, particularly in the mongoose, is reported from several islands.

Tropical South America (Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, and Venuezuela) covers the narrow coastal strip on the Pacific Ocean, the high Andean range with numerous peaks 5000-7000 m high, and the tropical rain forests of the Amazon basin, bordered to the north and south by savanna zones and dry tropical forest and scrub.

Arthropod-borne diseases are an important cause of ill health in rural areas. Malaria (in the falciparum, malariae and vivax forms) occurs in all ten countries of the area, as do American trypanosomiasis (Chagas' disease), and cutaneous and mucocutaneous leishmaniasis. There has been an increase of the latter in Paraguay. Visceral leishmaniasis is frequent in north-east Brazil, less frequent in other parts of Brazil, and in Colombia, and Venezuela, and rare in Bolivia, Paraguay, and Peru. Endemic onchocerciasis occurs in isolated foci in rural areas in Colombia, Ecuador, Venezuela, and northern Brazil. The bites of blackflies, the vectors of onchocerciasis, may also transmit other filarial parasites or cause unpleasant and sometimes severe hemorrhagic reactions. Bancroftian filariasis is endemic in parts of Brazil, French Guiana, Guyana, Suriname, and possibly in Venezuela. Plague has been reported in small foci in Bolivia, Brazil, Ecuador, and Peru. Among the

arthropod-borne viral diseases, jungle yellow fever may be found in forest areas in all countries except Paraguay and areas east of the Andes. In Brazil it is confined to the northern and western states. Epidemics of viral encephalitis and dengue fever occur in some of the northern countries. Bartonellosis, or Oroya fever, a sandfly-borne disease, occurs in arid river valleys on the western slopes of the Andes up to 3,000 meters. Louse-borne typhus is often found in mountain areas of Colombia and Peru.

Foodborne and waterborne diseases are common and include amebiasis, diarrheal diseases, helminthic infections, and viral hepatitis. The intestinal form of schistosomiasis (bilharziasis) is found in Brazil, Suriname, and north-central Venezuela. Paragonimiasis (oriental lung fluke) has been reported from Ecuador and Peru. Brucellosis is common and echinococcosis (hydatid disease) occurs, particularly in Peru.

Other diseases include a viral haemorrhagic fever that may be food-borne; this has been reported from Bolivia. Poliomyelitis is reported for all areas, but at a low incidence from French Guiana, Guyana, and Suriname. Rabies has been reported from many of the countries in this area. Meningococcal meningitis occurs in epidemic outbreaks in Brazil.

Snakes and leeches may be a hazard in some areas.

Temperate South America (Argentina, Chile, Falkland Islands (Malvinas), and Uruguay). The mainland ranges from the Mediterranean climatic area of the western coastal strip over the Andes divide on to the steppes and desert of Patagonia in the south and to the praires of the north-east.

The *arthropod-borne* diseases are relatively unimportant except for the widespread occurrence of American trypanosomiasis (Chagas' disease) throughout the rural areas of Argentina. Outbreaks of malaria occur in northwestern Argentina. Cutaneous leishmaniasis is reported from the northeastern part of the country.

Of the *foodborne and waterborne* diseases, gastroenteritis (mainly salmonellosis) is relatively common in Argentina, especially in suburban areas and among children under 5 years of age. Typhoid fever is not very common in Argentina. Viral hepatitis and intestinal parasitosis are widespread, the latter especially in the coastal region. Taeniasis, typhoid fever, viral hepatitis, and echinococcosis (hydatid disease) are reported from the other countries.

No cases of poliomyelitis have been reported in recent years from Argentina, Chili, or Uruguay.

Among other diseases, anthrax is an occupational hazard in the three mainland countries. Animal rabies is endemic in Argentina; it has increased in the last five years but is confined mainly to urban and suburban areas. Isolated cases of trachoma have been recorded in the north-east of Argentina and hemorrhagic fever is endemic in a limited zone of the pampas and in the center of the country.

ASIA

East Asia (China, the Democratic People's Republic of Korea, Hong Kong, Japan, Macao, Mongolia, and the Republic of Korea). The area includes the high mountain complexes, the desert and the steppes of the west, the various forest zones of the east, down to the subtropical forests of the south-east.

Among the *arthropod-borne* diseases, malaria now occurs only in China, particularly in the southern provinces. Both Bancroftian and Malayan filariasis are reported, the former from China and the latter from China and the Republic of Korea. Malayan filariasis is reported from China and the Republic of Korea. Visceral leishmaniasis and plague may be found in China. Epidemics of dengue fever, hemorrhagic fever with renal syndrome, and Japanese encephalitis may occur in this area. Tick-borne encephalitis is reported from China and the Republic of Korea. Mite-borne or scrub typhus may be found in scrub areas in southern China, certain river valleys in Japan, and in the Republic of Korea.

Foodborne and waterborne diseases such as diarrheal diseases and viral hepatitis are common in most countries. Schistosomiasis (bilharziasis) can be acquired in many watercourses of southeastern and eastern China along the Chang Jiang (Yangtze) Valley and its tributaries. Active foci no longer occur in Japan. Clonorchiasis (oriental liver fluke) and paragonimiasis (oriental lung fluke) are reported in China, Japan, and the Republic of Korea, and fasciolopsiasis (giant intestinal fluke) in China.

Poliomyelitis has not been reported in recent years from Macao and Mongolia. Apart from China, the incidence is believed low in other countries in the area. Trachoma, brucellosis, and leptospirosis occur in China.

Eastern South Asia (Brunei Darussalam, Burma, Democratic Kampuchea, Indonesia, Lao People's Democratic Republic, Malaysia, the Philipppines, Singapore, Thailand, and Viet Nam). From the tropical rain and monsoon forests of the north-west, the area extends through the savanna and the dry tropical forests of the Indochina peninsula, returning to the tropical rain and monsoon forests of the islands bordering the South China Sea.

The *arthropod-borne* diseases are an important cause of morbidity throughout the area. Malaria and filariasis are endemic in many parts of the rural areas of all the countries or areas-except for malaria in Brunei Darussalam, and Singapore, where only imported cases occur. Foci of visceral leishmaniasis and plague exist in Burma. Plague occurs in Viet Nam. Japanese encephalitis, dengue and dengue hemorrhagic fever can occur in epidemics in both urban and rural areas. Mite-borne typhus has been reported in deforested areas in most countries.

Foodborne and waterborne diseases are common. Cholera and other watery diarrheas, amebic and bacillary dysentery, typhoid fever, and viral hepatitis may occur in all countries in the area. Schistosomiasis (bilharziasis) is endemic in the Philippines and in central Sulawesi (Indonesia) and occurs in small foci in the Mekong Delta. Among other helminthic infections, fasciolopsiasis (giant intestinal fluke) may be acquired in most countries in the area; clonorchiasis (oriental liver fluke) in the Indochina peninsula; opisthorchiasis (cat liver fluke) in the Indochina peninsula, Malaysia, the Philippines, and Thailand; and paragonimiasis in the Philippines. Melioidosis can occur sporadically throughout the area.

Poliomyelitis is reported throughout the area, but the incidence is low in Brunei Darussalam, and Malaysia and it has been eliminated from Singapore. Trachoma exists in Burma, Indonesia, Thailand, and Viet Nam.

Other hazards include rabies, snake bites, and leeches.

Middle South Asia (Afghanistan, Bangladesh, Bhutan, India, Islamic Republic of Iran, Maldives, Nepal, Pakistan, and Sri Lanka). Bordered for the most part by high mountain ranges in the north, the area extends from steppes and desert in the west to monsoon and tropical rain forests in the east and south.

Arthropod-borne diseases are endemic. Malaria occurs in some of these countries in urban and in rural areas. Filariasis is common in Bangladesh and India. Visceral leishmaniasis and sandfly fever are on the increase. Cutaneous leishmaniasis occurs in Afghanistan, India (Rajasthan), the Islamic Republic of Iran, and Pakistan. Tick-borne relapsing fever and typhus are reported from Afghanistan, India, and the Islamic Republic of Iran, and typhus occurs in Afghanistan and India. Epidemics of dengue fever may occur in Bangladesh, India, Pakistan, and Sri Lanka and the hemorrhagic form has been reported from eastern India and Sri Lanka. Japanese encephalitis has been reported from the eastern part of the area and Crimean-Congo hemorrhagic fever from the western part. Another tick-borne hemorrhagic fever has been reported in forest areas of Karnataka State in India and in a rural area of Rawalpindi District in Pakistan.

Foodborne and waterborne diseases are common, in particular cholera and other watery diarrheas, the dysenteries, typhoid fever, viral hepatitis, and helminthic infections. Giardiasis is reported to be common in the Islamic Republic of Iran. A focus of schistosomiasis (bilharziasis) exists in the southwest of the Islamic Republic of Iran. Foci of guinea-worm infection occur in India and in Sri Lanka.

Brucellosis and echinococcosis (hydatid disease) are found in many countries in the area.

Poliomyelitis is widespread. Trachoma is common in Afghanistan, India, the Islamic Republic of Iran, Nepal, and Pakistan. Snakes and the presence of rabies in animals are hazards in most of the countries in the area.

Western South Asia—Bahrain, Cyprus, Democratic Yemen, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, the United Arab Emirates, and Yemen). The area ranges from the mountains and steppes of the north-west to the large deserts and dry tropical scrub of the south.

Except for malaria in certain areas, the *arthropod-borne* diseases, are not widespread hazards for the traveler. Malaria does not exist in Kuwait, no longer occurs in Bahrain, Cyprus, Israel, Jordan, Lebanon, or Qatar. Its incidence in the Syrian Arab Republic is low, but elsewhere is endemic in certain rural areas. Cutaneous leishmaniasis and rare cases of visceral leishmaniasis are reported throughout the area. Murine and tick-borne typhus can occur in most countries. Tick-borne relapsing fever may occur. Crimean-Congo hemorrhagic fever has been reported from Iraq.

The *foodborne and waterborne* diseases are a major hazard in most countries. The typhoid fevers and viral hepatitis exist in all countries and cholera has been reported from many of them. Schistosomiasis (bilharziasis) occurs in Democratic Yemen, Iraq, Saudi Arabia, the Syrian Arab Republic, and Yemen. Guinea-worm infection is found in some of these countries. Taeniasis (tapeworm) is reported from many of the countries. Brucellosis is widespread and there are foci of echinococcosis (hydatid disease).

Poliomyelitis has not been reported from Cyprus in recent years, but is endemic in other countries. Trachoma and animal rabies may be a problem in many countries.

The greatest hazards to pilgrims to Mecca and Medina are heat and water depletion if the period of the Hajj coincides with the hot season.

EUROPE

Northern Europe (Belgium, Czechoslovakia, Denmark (with the Faroe Islands), Finland, German Democratic Republic, Germany, Federal Republic of, Iceland, Ireland, Luxembourg, Netherlands, Norway, Poland, Sweden, USSR, United Kingdom (with the Channel Islands and the Isle of Man). The area encompassed by these countries extends from the broadleaf forests and the plains of the west to the boreal and mixed forest to be found as far as the Pacific Ocean.

The incidence of communicable diseases in most countries is such that they are unlikely to prove a hazard to international travelers greater than that found in their own country. There are health risks but in most areas the precautions required are minimal.

Of the *arthropod-borne* diseases, there are very small foci of malaria and cutaneous leishmaniasis in southern USSR, and tick-borne typhus in east and central Siberia. Tick-borne encephalitis, for which a vaccine exists, and hemorrhagic fevers may occur in the same areas.

The *foodborne and waterborne* conditions, other than the diarrheal diseases, are taeniasis (tapeworm) and trichinellosis in parts of northern Europe, diphyllobothriasis (fish tapeworm) from the freshwater fish around the Baltic Sea area, and giardiasis from areas in western USSR.

Rabies is endemic in animals (particularly foxes) in rural areas of northern Europe except Iceland, Ireland, the Netherlands, Norway, Sweden, and the United Kingdom.

A climatic hazard in part of northern Europe is the extreme cold in winter.

Southern Europe (Albania, Andorra, Austria, Bulgaria, France, Gibraltar, Greece, Hungary, Italy, Liechtenstein, Malta, Monaco, Portugal (with the Azores and Madeira), Romania, San Marino, Spain (with the Canary Islands), Switzerland, and Yugoslavia). The area extends from the broad-leaf forests in the northwest and the mountains of the Alps to the prairies and, in the south and south-east, the scrub vegetation of the Mediterranean.

Among the *arthropod-borne* diseases, sporadic cases of murine and tick-borne typhus and mosquito-borne West Nile fever occur in countries bordering the Mediterranean littoral. Cutaneous and visceral leishmaniasis and sandfly fever are also reported from this area. Tickborne encephalitis, for which a vaccine exists, and hemorrhagic fevers may occur in the eastern part of the area.

The *foodborne and waterborne* diseases-bacillary dysentery and other diarrheas, and typhoid fever-are more common in the summer and autumn months, with a high incidence in the southeastern and southwestern parts of the area. Brucellosis

can occur in the extreme southwest and southeast and echinococcosis (hydatid disease) in the southeast.

Among other diseases, rabies in animals exists in most countries of the southern European except Gibraltar, Malta, Portugal and Spain.

OCEANIA

Australia, New Zealand and the Antarctic. In Australia the mainland has tropical monsoon forests in the north and east, dry tropical forests, savanna and deserts in the center, and Mediterranean scrub and subtropical forests in the south. New Zealand has a temperate climate with the North Island characterized by subtropical forests and the South Island by steppe vegetation and hardwood forests.

International travelers to Australia and New Zealand, will, in general, not be subjected to the hazards of communicable diseases to an extent greater than that found in their own country.

Arthropod-borne diseases (mosquito-borne epidemic polyarthritis and viral encephalitis) may occur in some rural areas of Australia. Dengue fever is present in parts of Northern Queensland and the Torres Strait islands.

Among the *foodborne and waterborne* diseases, amebic meningoencephalitis has been reported.

Coelenterates (corals and jellyfish) may provide a hazard to the sea-bather, and effects from heat may occur in the northern and central parts of Australia.

Melanesia and Micronesia-Polynesia (American Samoa, Cook Islands, Easter Island, Fiji, French Polynesia, Guam, Kiribati, Nauru, New Caledonia, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Trust Territory of the Pacific Islands, Tuvalu, Vanuatu, and the Wallis and Futuna Islands). The area covers an enormous expanse of ocean with the larger, mountainous, tropical and monsoon rain-forest-covered islands of the west giving way to the smaller, originally volcanic peaks and coral islands of the east.

Arthropod-borne diseases occur in the majority of the islands. Malaria is endemic in Papua New Guinea and is found as far east and south as Vanuatu. Neither malaria nor anopheline vectors are found in Fiji or the islands to the north and as far as French Polynesia and Easter Island in the east, nor in New Caledonia to the south. Filariais is widespread but its prevalence varies. Mite-borne typhus has been reported from Papua New Guinea. Dengue fever, including its hemorrhagic form, can occur in epidemics in most islands. Japanese encephalitis has been reported.

Foodborne and waterborne diseases such as the diarrheal diseases, the typhoid fevers and helminthic infections are commonly reported. Biointoxication may occur from raw or cooked fish and shellfish.

Poliomyelitis occurs in Papua New Guinea and trachoma in parts of Melanesia.

Hazards to bathers are coelenterates, poisonous fish, and sea snakes.

HEALTH HINTS FOR THE INTERNATIONAL TRAVELER

HEALTH HINTS FOR THE INTERNATIONAL TRAVELER

INTRODUCTION

This section includes practical information on how to avoid potential health problems. Some of these recommendations are common-sense precautions; others have been scientifically documented.

Personal and specific preventive measures against certain diseases may require advance planning and advice from a physician concerning immunization and prophylaxis. If more specific information is needed, travelers should contact their local health department or physician.

Travelers who take prescription medications should carry an adequate supply accompanied by a signed and dated statement from a physician; the statement should indicate the major health problems and dosage of such medications, to provide information for medical authorities in case of emergency. The traveler should take an extra pair of glasses or lens prescription, and a card, tag, or bracelet that identifies any physical condition that may require emergency care.

IF MEDICAL CARE IS NEEDED ABROAD

If medical care is needed abroad, travel agents or the American Embassy or Consulate can usually provide names of hospitals or physicians. Prior to departure, travelers may obtain information on emergency medical services or emergency transportation by contacting a medical assistance program such as the following:

International Association for Medical Assistance to Travelers (IAMET)*, 736 Center Street, Lewiston, New York 14092 (716-754-4883).

Intermedic*, 777 Third Avenue, New York, New York 10017 (212-486-8974).

International SOS Assistance*, Box 11568, Philadelphia, Pennsylvania 19116 (800-523-6586 or 215-245-4707).

Nationwide/Worldwide Emergency Ambulance Return (NEAR)*, 1900 North MacArthur Boulevard, Oklahoma City, Oklahoma 73127 (800-654-6700).

Assist-Card*, 745 Fifth Avenue, New York, New York 10022 (212-752-2788).

Health Care Abroad*, 923 Investment Building, 1511 K Street, N.W., Washington, D.C. 20006 (800-336-3310).

Physicians Air Transport International*, P.O. Box 67, Northampton, Massachusetts 01061 (413-586-5503).

MOTION SICKNESS

Travelers with a history of motion sickness or sea sickness can attempt to avoid symptoms by taking anti-motion-sickness pills or antihistaminics before departure.

HEALTH PROBLEMS FOR PREGNANT WOMEN TRAVELING ABROAD

The problems that a pregnant woman might encounter during international travel are basically the same as problems that other international travelers have. These have to do with exposure to infectious diseases and availability of good medical care. There is the additional potential problem that air travel late in pregnancy might precipitate labor.

*Use of names is for identification and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Information on vaccination and malaria prophylaxis during pregnancy may be found in each disease section.

Potential health problems vary from country to country; therefore, if the traveler has specific questions, she should be advised to check with the embassy or local consulate general office of the country in question before traveling.

HANDICAPPED AIR TRAVELERS

The Airport Operators Council International, Incorporated, publishes "Access Travel: A Guide to Accessibility of Terminals." The 40-page guide lists design features, facilities, and services for handicapped persons in 472 airport terminals in over 50 countries. Single copies are available at no cost from the Architectural and Transportation Barriers Compliance Board. For a copy, write Access America, Washington, D.C. 20202-2101.

ANTHRAX-CONTAMINATED GOATSKIN HANDICRAFTS

Anthrax is a disease caused by a bacterial organism that produces spores that are highly resistant to disinfection. These infectious spores may persist on a contaminated item for many years. Anthrax spores have been found on goatskin handicrafts from Haiti.

Travelers to Caribbean countries are advised not to purchase Haitian goatskin handicrafts. Because of the risk, importation of goatskin handicrafts from Haiti will not be permitted at U.S. ports of entry; they will be confiscated and destroyed.

RISKS FROM FOOD AND DRINK

Contaminated food and drink are common sources for the introduction of infection into the body. Among the more common infections that travelers may acquire from contaminated food and drink are *Escherichia coli* infections, shigellosis or bacillary dysentery, giardiasis, cryptosporidiosis, and hepatitis A. Other less common infectious disease risks for travelers include typhoid fever and other salmonelloses, cholera, infections caused by rotaviruses and Norwalk-like viruses, and a variety of protozoan and helminth parasites (other than those that cause giardiasis and cryptosporidiosis). Many of the infectious diseases transmitted in food and water can also be acquired directly through the fecal-oral route.

The easiest way to guarantee a safe food source for an infant less than 6 months of age is to have the child breast-feed. If the infant has already been weaned from the breast, formula prepared from commercial powder and boiled water is the safest and most practical food.

Water

Water that has been adequately chlorinated, using minimum recommended water-works standards as practiced in the United States, will afford significant protection against viral and bacterial waterborne diseases. However, chlorine treatment alone, as used in the routine disinfection of water, may not kill some enteric viruses and the parasitic organisms that cause giardiasis and amebiasis. In areas where chlorinated tap water is not available, or where hygiene and sanitation are poor, travelers should be advised that only the following may be safe to drink:

1. Beverages, such as tea and coffee, made with boiled water
2. Canned or bottled *carbonated* beverages, including *carbonated* bottled water and soft drinks
3. Beer and wine

Where water may be contaminated, ice (or containers for drinking) also should be considered contaminated. Thus, in these areas ice should not be used in beverages. If ice has been in contact with containers used for drinking, the containers should be thoroughly cleaned, preferably with soap and hot water, after the ice has been discarded.

It is safer to drink directly from a can or bottle of a beverage than from a questionable container. However, water on the outside of cans or bottles of beverages might be contaminated. Therefore, wet cans or bottles should be dried before being opened, and surfaces which are contacted directly by the mouth in drinking should first be wiped clean. Where water may be contaminated, travelers should avoid brushing their teeth with tap water.

Boiling is by far the most reliable method to make water of uncertain purity safe for drinking. Chemical disinfection with iodine is an alternative method of water treatment when it is not feasible to boil water. Two well-tested methods for disinfection with iodine are the use of tincture of iodine (Table 19), and the use of tetraglycine hydroperiodide tablets (Globaline, Potable-Agua, Coghlan's*, etc.). The tablets are available from both pharmacies and sporting goods stores. The manufacturer's instructions should be followed. If water is cloudy, the number of tablets should be doubled; if water is extremely cold, an attempt should be made to warm the water, and the recommended contact time should be increased to achieve reliable disinfection. Cloudy water should be strained through a clean cloth into a container to remove any sediment or floating matter, and then the water should be treated with heat or iodine.

*Use of tradenames is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

TABLE 19. Treatment of Water With Tincture of Iodine

Tincture of iodine (from medicine chest or first aid kit)	Drops* to be added per quart or liter	
	Clear water	Cold or cloudy water†
2%	5	10

*1 drop = 0.05 ml
Let stand for 30 minutes.
Water is safe to use.

†Very turbid or very cold water may require prolonged contact time; let stand up to several hours prior to use, if possible.

Treatment of water with heat

1. Bring the water to a vigorous boil. Allow to cool to room temperature—do not add ice. At very high altitudes, for an extra margin of safety, boil for several minutes or use chemical disinfection.
2. Adding a pinch of salt to each quart, or pouring the water several times from one container to another will improve the taste.

As a last resort, if no source of safe drinking water is available or can be obtained, tap water that is uncomfortably hot to touch is usually safe. After allowing such hot water to cool to room temperature in a thoroughly cleaned container, it may be used for brushing teeth, as well as for drinking.

Food

To avoid illness, food should be selected with care. All raw food is subject to contamination. Particularly in areas where hygiene and sanitation are inadequate, the traveler should be advised to avoid salads, uncooked vegetables, unpasteurized milk and milk products, such as cheese, and to eat only food that has been cooked and is still hot, or fruit that has been peeled by the traveler. Undercooked and raw meat, fish, and shellfish may carry various intestinal pathogens.

Some species of fish and shellfish can contain poisonous biotoxins, even when well cooked. The most common type of fish poisoning in travelers is ciguatera fish poisoning. Red snapper, grouper, barracuda, amberjack, sea bass, and a wide range of tropical reef fish contain the toxin at unpredictable times. The potential for ciguatera poisoning exists in all subtropical and tropical insular areas of the West Indies, Pacific and Indian Oceans where the implicated fish species are consumed.

TRAVELERS' DIARRHEA

Epidemiology

Travelers' diarrhea (TD) is a syndrome characterized by a twofold or greater increase in the frequency of unformed bowel movements. Commonly associated symptoms include abdominal cramps, nausea, bloating, urgency, fever, and malaise. Episodes of TD usually begin abruptly, occur during travel or soon after returning home, and are generally self-limited. The most important determinant of risk is the destination of the traveler. Attack rates in the range of 20 to 50 percent are commonly reported. High-risk destinations include most of the developing countries of Latin America, Africa, the Middle East, and Asia. Intermediate risk destinations include most of the Southern European countries and a few Caribbean islands. Low risk destinations include Canada, Northern Europe, Australia, New Zealand, the United States and a number of the Caribbean islands.

TD is slightly more common in young adults than in older people. The reasons for this difference are unclear, but may include a lack of acquired immunity, more adventurous travel styles, and different eating habits. Attack rates are similar in men and women. The most common onset of TD is usually within the first week, but onset may occur at any time during the visit, and even after returning home.

TD is acquired through ingestion of fecally contaminated food and/or water. Both cooked and uncooked foods may be implicated if improperly handled. Espe-

cially risky foods include raw vegetables, raw meat, and raw seafood. Tap water, ice, unpasteurized milk and dairy products, and unpeeled fruits are associated with increased risk of TD; safe beverages include bottled carbonated beverages (especially flavored beverages), beer, wine, hot coffee or tea, or water boiled or appropriately treated with iodine or chlorine.

The eating place appears to be an important variable, with private homes, restaurants, and street vendors listed in order of increasing risk.

TD typically results in four to five loose or watery stools per day. The median duration of diarrhea is 3 to 4 days. Ten percent of the cases persist longer than 1 week, approximately 2 percent longer than 1 month, and less than 1 percent longer than 3 months. Persistent diarrhea is thus quite uncommon and may differ considerably from acute TD with respect to etiology and risk factors. Travelers may experience more than one attack of TD during a single trip. Approximately 15 percent experience vomiting, and 2 to 10 percent may have diarrhea accompanied by fever or bloody stools, or both. Rarely is TD life-threatening.

Etiology

Infectious agents are the primary cause of TD. Travelers from industrialized countries to developing countries frequently develop a rapid, dramatic change in the type of organisms in their gastrointestinal tract. These new organisms often include potential enteric pathogens. Those who develop diarrhea have ingested an inoculum of virulent organisms sufficiently large to overcome individual defense mechanisms, resulting in symptoms.

Enteric Bacterial Pathogens

Enterotoxigenic *Eschericia coli* (ETEC) are the most common causative agents of TD in all countries where surveys have been conducted.

Salmonella gastroenteritis is a well-known disease that occurs throughout the world. In the industrialized nations, this large group of organisms is the most common cause of outbreaks of food-associated diarrhea. In the developing countries, the proportion of cases of TD caused by salmonellae varies but is not high. Salmonellae also can cause dysentery characterized by bloody mucus-containing small-volume stools.

Shigellae are well known as the cause of bacillary dysentery. However, few of the infected travelers have dysentery, but most have watery diarrhea. The shigellae caused TD in about 5 to 15 percent of travelers in the few countries that have been studied.

Campylobacter jejuni is a common cause of diarrhea throughout the world. Recent, limited data have shown that *C. jejuni* is responsible for a small percentage of the reported cases of TD, some with bloody diarrhea. Additional studies are needed to determine how frequently it causes TD.

Vibrio parahaemolyticus is associated with the ingestion of raw or poorly cooked seafood and has caused TD in passengers on Caribbean cruise ships and in Japanese people traveling in Asia. How frequently it causes disease in other areas of the world is unknown.

Other potential bacterial pathogens include *Aeromonas hydrophila, Yersinia enterocolitica, Pleisiomonas shigelloides, Vibrio cholerae* (non-01), and *Vibrio fluvialis.*

Viral Enteric Pathogens—Rotavirus and Norwalk-like Virus

Along with the newly acquired bacteria, the traveler may also acquire many viruses. In six studies, for example, 0 to 36 percent of diarrheal illnesses (median 22 percent) were associated with rotaviruses in the stools. However, a comparable number of asymptomatic travelers also had rotaviruses, and up to 50 percent of symptomatic rotavirus infections were associated with nonviral pathogens. Ten to fifteen percent of travelers develop serologic evidence of infection with Norwalk-like viruses. The roles of adenoviruses, astroviruses, coronaviruses, enteroviruses, or other viral agents in causing TD are even less clear. Although viruses are commonly acquired by travelers, they do not appear to be frequent causes of TD in adults.

Parasitic Enteric Pathogens

The few studies that have included an examination for parasites reveal that 0 to 9 percent have *Giardia lamblia* or *Entamoeba histolytica*. *Cryptosporidium* has recently been recognized in sporadic cases of TD.

Dientamoeba fragilis, Isospora belli, Balantidium coli, or *Strongyloides stercoralis* may cause occasional cases of TD. While not major causes of acute TD, these parasites should be sought in persisting, unexplained cases.

Unknown Causes

No data have been presented to support noninfectious causes of TD such as changes in diet, jet lag, altitude, and fatigue. Current evidence indicates that in all but a few instances (e.g., drug-induced or preexisting gastrointestinal disorders) an infectious agent or agents cause diarrhea in tourists. However, even with the application of the best current methods for detecting bacteria, viruses, and parasites, in various studies 20 to 50 percent of cases of TD remain without recognized etiologies.

Prevention

There are four possible approaches to prevention of TD. They include instruction regarding food and beverage preparation, immunization, use of nonantimicrobial medications, and prophylactic antimicrobial drugs.

Data indicate that meticulous attention to food and beverage preparation, as mentioned above, can decrease the likelihood of developing TD. Most travelers, however, encounter great difficulty in observing the requisite dietary restrictions.

No available vaccines and none that are expected to be available in the next 5 years are effective against TD.

Several antimicrobial agents have been advocated for prevention of TD. Available controlled studies indicate that prophylactic use of difenoxine, the active metabolite of diphenoxylate (Lomotil*), actually increases the incidence of TD in addition to producing other undesirable side effects. No antiperistaltic agents (e.g., Lomotil* and Imodium*) are effective in preventing TD. No data support the prophylactic use of activated charcoal.

Bismuth subsalicylate, taken in liquid form as the active ingredient of Pepto-Bismol* (2 oz four times daily), has decreased the incidence of diarrhea by 60 per-

*Use of tradenames is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

cent in one study. Available data are not extensive enough to exclude a risk to the traveler from the use of such large doses of bismuth subsalicylate over a period of several weeks. In patients already taking salicylates for arthritis, large concurrent doses of bismuth subsalicylate can produce toxic serum concentrations of salicylate. On the basis of its modest potential benefit achieved with large doses, together with its uncertain risks, bismuth subsalicylate is not recommended for prophylaxis of TD.

Controlled data are available on the prophylactic value of several antimicrobial drugs. Enterovioform* and related halogenated hydroxyquinoline derivatives (e.g., clioquinol, iodoquinol, Mexaform*, Intestopan*, and others) are not helpful in preventing TD, may have serious neurological side effects, and should never be used for prophylaxis of TD.

Carefully controlled studies have indicated that two agents, doxycycline and trimethoprim/sulfamethoxazole (TMP/SMX), when taken prophylactically, are consistently effective in reducing the incidence of TD by 50 to 86 percent in various areas of the developing world. One study shows that trimethoprim alone is also effective.

The benefits of widespread prophylactic use of doxycycline or TMP/SMX or TMP alone in several million travelers must be weighed against the potential drawbacks. The known risks include allergic and other side effects (such as common skin rashes, photosensitivity of the skin, blood disorders, Stevens-Johnson syndrome and staining of the teeth in children) as well as other infections that may be induced by antimicrobial therapy (such as antibiotic-associated colitis, *Candida* vaginitis, and *Salmonella* enteritis). Because of the uncertain risk of widespread administration of these antimicrobial agents, their prophylactic use is not recommended. Nor is there any basis for recommending their use prophylactically for special groups of travelers. Furthermore, there is no documented evidence that there are any groups of disease entities that are worsened sufficiently by an episode of TD to risk the rare undesirable side effects of prophylactic antimicrobial drugs.

On the basis of apparent risk/benefit ratios, prophylactic antimicrobial agents are not recommended for travelers. Available data support only the recommendation that travelers be instructed in regard to sensible dietary practices as a prophylactic measure. This recommendation is justified by the excellent results of early treatment of TD as outlined below. Some travelers may wish to consult with their physician and may elect to use prophylactic antimicrobial agents for travel under special circumstances, once the risks and benefits are clearly understood.

Treatment

Individuals with TD have two major complaints for which they desire relief—abdominal cramps and diarrhea. Many agents have been proposed to control these symptoms, but few have been demonstrated to be effective by rigorous clinical trials.

Nonspecific Agents

A variety of "adsorbents" have been used in the treatment of diarrhea. For example, activated charcoal has been found ineffective in the treatment of diarr-

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hea. Kaolin and pectin have been widely used for diarrhea. The combination appears to give the stools more consistency but has not been shown to decrease cramps and frequency of stools nor to shorten the course of infectious diarrhea.

Antimicrobial Treatment

Travelers who develop diarrhea with three or more loose stools in an 8-hour period, especially if associated with nausea, vomiting, abdominal cramps, fever, or blood in the stools, may benefit from antimicrobial treatment. A typical 3- to 5-day illness can often be shortened to 1 to 1 1/2 days by effective antimicrobial agents. Those best studied to date are TMP/SMX, 160 mg TMP and 800 mg SMX, or TMP alone, 200 mg taken twice daily. Preliminary evidence suggests that doxycycline, taken 100 mg twice daily, is also effective. Three days of treatment is recommended, although 2 days or fewer may be sufficient. Nausea and vomiting without diarrhea should not be treated with antimicrobial drugs.

Travelers should consult a physician, rather than attempt self-medication, if the diarrhea is severe or does not resolve within several days; if there is blood and/or mucus in the stool; if fever occurs with shaking chills; or if there is dehydration with persistent diarrhea.

Lactobacillus preparations and yogurt have also been advocated, but no evidence supports these treatments for TD.

Bismuth subsalicylate preparation (1 oz every 30 minutes for eight doses) decreased the rate of stooling by one-half in a study of travelers with diarrhea when compared with a placebo group. However, there was no difference between the two groups in stool output in the first 4 hours of the study. There is concern about taking, without supervision, large amounts of bismuth and salicylate, especially in individuals who may be intolerant to salicylates, who have renal insufficiency, or who take salicylates for other reasons.

Antimotility Agents

Antimotility agents are widely used in the treatment of diarrhea of all types. Natural opiates (paregoric, deodorized tincture of opium, and codeine) have long been used to control diarrhea and cramps. Synthetic agents, diphenoxylate and loperamide, come in convenient dosage forms and provide prompt symptomatic but temporary relief. However, they should not be used in patients with high fever or with blood in the stool. These drugs should be discontinued if symptoms persist beyond 48 hours. Diphenoxylate and loperamide should not be used in children under the age of 2.

Oral fluids

Most cases of diarrhea are self-limited and require only simple replacement of fluids and salts lost in diarrheal stools. Fluid and electrolyte balance can be maintained by potable fruit juices, caffeine-free soft drinks, and salted crackers. Iced drinks and noncarbonated bottled fluids made from water of uncertain quality should be avoided. Dairy products aggravate diarrhea in some people and should be avoided. Travelers may prepare their own fruit juice from fresh fruit. A good formula for the treatment of the more common diarrheal diseases is provided in Table 20. This formula can be used whether or not antidiarrheal drugs are taken.

TABLE 20. Formula For Treatment of Diarrheal Disease

Prepare 2 separate glasses of the following:

Glass Number 1	
Orange, apple, or other fruit juice (rich in potassium)	8 ounces
Honey or corn syrup (contains glucose necessary for absorption of essential salts)	1/2 teaspoon
Salt, table (contains sodium and chloride)	1 pinch
Glass Number 2	
Water (carbonated or boiled)	8 ounces
Soda, baking (contains sodium bicarbonate)	1/4 teaspoon

Drink alternately from each glass until thirst is quenched. Supplement as desired with carbonated beverages, water, or tea made with boiled or carbonated water. Avoid solid foods and milk until recovery occurs. It is important that infants continue breast-feeding and receive water as desired while receiving these salt solutions.

Individuals with severe dehydration may require special fluid and electrolyte replacement in the form of oral replacement solutions such as those recommended by the World Health Organization.

Infants with Diarrhea

The greatest risk to the infant with diarrhea is dehydration. Dehydration can often be prevented by feeding the infant thin porridges and soups which normally conatin salt, in addition to the infant's usual food. Infants with diarrhea who exhibit signs of mild dehydration, e.g. thirst and restlessness, should be given an oral rehydration solution (ORS), such as the one produced for the World Health Organization*. The packet of salts and carbohydrate should be added to a liter of boiled or treated water; once prepared, it should be kept for no longer than 12 hours at room temperature, or 24 hours refrigerated. The dehydrated child will drink ORS avidly; ORS is given *ad lib* to the child as long as the dehydration persists. The infant who vomits the ORS will usually keep it down if the ORS is offered in frequent small sips. Breast-feeding, or formula, gruel, and soup feeding should be continued throughout the illness.

Immediate medical attention is required for the infant with diarrhea who develops signs of moderate to severe dehydration (Table 21), bloody diarrhea, fever greater than 102° F, or persistent vomiting. While medical attention is being obtained, the infant should be offered ORS.

* Jiana Brothers Packaging Co., Inc. Kansas City, Missouri. Use of names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

TABLE 21. Assessment of the Dehydration Levels in Infants

	Signs		
	Mild	**Moderate**	**Severe**
General Condition	Thirsty, restless, agitated.	Thirsty restless, irritable.	Withdrawn, somnolent, or comatose.
Pulse	Normal	Rapid and weak	Rapid and weak
Anterior fontanelle	Normal	Sunken	Very sunken
Eyes	Normal	Sunken	Very sunken
Tears	Present	Absent	Absent
Urine	Normal	Reduced and concentrated	None for several hours
Weight loss	4-5%	6-9%	10% or more

Precautions in Children and Pregnant Women

Although children do not make up a large proportion of travelers to high-risk areas, some children do accompany their families. Teenagers should follow the advice given to adults, with possible adjustment of doses of medication. Physicians should be aware of the risks of tetracyclines to children under 12 years. There is a paucity of data available about usage of antidiarrheal drugs in children. Drugs should be prescribed with caution for pregnant women and nursing mothers.

SEXUALLY TRANSMITTED DISEASES

International travelers are at risk of contracting sexually transmitted diseases (STD). Because travelers are away from their normal environments, some may choose new sexual partners and they may choose sexual partners who have a high incidence of these diseases. Travelers should be aware that the risk of STD, such as syphilis, gonorrhea, chlamydial infection, HTLV-III/LAV infection, and also the acquired immuno-deficiency syndrome (AIDS) may be high in some areas of the world. Of particular concern are penicillinase-producing (penicillin-resistant) strains of *Neisseria gonorrhoeae* (PPNG). Countries in Southeast Asia (especially the Philippines, Republic of Korea, Singapore, and Thailand) and in East and West Africa (especially Ghana, Ivory Coast, Kenya, and Nigeria) are believed to have particularly high PPNG prevalence. Although information is limited, PPNG seems to be increasing in incidence in the Caribbean area and may be a problem in a number of countries in Central and South America.

To reduce the risk of STD, travelers should avoid multiple partners, anonymous partners, prostitutes, and other persons who have multiple sex partners. If

they chose to have intercourse with these high risk groups they should avoid sexual contact with persons who have a genital discharge, genital warts, genital herpes lesions or other suspicious genital lesions, AIDS or evidence of HTLV-III/LAV or hepatitis B infection; avoid oral-anal contact to prevent enteric infections; and avoid genital contact with oral "cold sores." During intercourse travelers should use condoms and/or diaphragms in combination with spermicides. Exposure to any of the high-risk situations listed above, especially if symptoms develop, should prompt travelers to be examined immediately by a qualified physician and, if necessary, to receive appropriate treatment.

ENVIRONMENTAL EFFECTS

International travelers may be subject to certain stresses that may lower resistance to disease, such as crowding, disruption of usual eating and drinking habits, and time changes with "jet lag" contributing to a disturbed pattern of the sleep and wakefulness cycle. These conditions of stress can lead to nausea, indigestion, fatigue, or insomnia. Complete adaptation depends on the number of time zones crossed but may take a week or more.

Heat and cold can be directly or indirectly responsible for some diseases and can give rise to serious skin conditions. Dermatophytoses such as athlete's foot are often made worse by warm, humid conditions.

Excessive heat and humidity alone, or immoderate activity under those conditions, may lead to heat exhaustion due to salt and water deficiency and to the more serious heat stroke or hyperthermia. The ultraviolet rays of the sun can cause severe and very debilitating sunburn in lighter-skinned persons.

Excessive cold affects persons who may be inadequately dressed and particularly the elderly; it can lead to hypothermia and to frost-bite of exposed parts of the body.

Breathing and swallowing dust when traveling on unpaved roads or in arid areas may be followed by nausea and malaise, and may cause increased susceptibility to infections of the upper respiratory tract.

Traveling in high altitudes may lead to insomnia, headache, nausea, and altitude sickness, even in young and healthy persons, and can cause distress to those with cardiac or pulmonary conditions. Individual susceptibility to acute mountain sickness is highly variable. Travelers who are at greatest risk are those who ascend rapidly to tourist sites in the Andes and the Himalayas. Acetazolamide has been shown, under both simulated and actual climbing conditions, to hasten the process of acclimatization to high altitudes. The recommended dosage to prevent acute mountain sickness is 250 mg every 8-12 hours, with medication initiated 24-48 hours before, and continued during ascent. Acetazolamide should not be taken by individuals who are allergic to sulfonamides.

ACCIDENTS

The major causes of serious disability or loss of life are not infectious. Trauma caused by accidents, particularly automobile accidents, leads the list. Most vehicle accidents are preventable or can be abated. In developing areas, roads are generally not as well engineered as in developed areas and road hazards are common. Defensive driving is the most important preventive measure. When an option is

available, use safety belts. As a high proportion of accidents occur at night when returning from "social events," avoid nonessential night-time driving, alcohol, and driving with persons who are obviously under the influence of alcohol or drugs. Pedestrian travel is sometimes risky in the poorly regulated traffic common in developing countries.

Other major accidents include drowning, carbon monoxide poisoning, electric shocks, and drug reactions from exposure to dangerous drugs. Protection against some potentially hazardous drugs is nonexistent in some countries. Do not buy medications "over the counter" unless you are familiar with the product.

SWIMMING

Swimming in contaminated water may result in skin, eye, ear, and certain intestinal infections, particularly if the swimmer's head is submerged. Generally only pools that contain chlorinated water can be considered safe places to swim. In certain areas, fatal primary amebic meningoencephalitis has occurred following swimming in warm dirty water. Swimmers should avoid beaches that might be contaminated with human sewage, or with dog feces. Wading or swimming should be avoided in freshwater streams, canals, and lakes liable to be infested with the snail hosts of schistosomiasis (bilharziasis) or contaminated with urine from animals infected with *Leptospira.* Biting and stinging fish and corals and jelly fish may provide a hazard to the swimmer.

ANIMAL-ASSOCIATED HAZARDS

Animals in general tend to avoid human beings, but they can attack, particularly if they are with young. In areas of endemic rabies, domestic dogs, cats, or other animals should not be petted. Wild animals should be avoided.

The bites, stings, and contact of some insects cause unpleasant reactions. Many insects also transmit communicable diseases. Some insects can bite and transmit disease without the person being aware of the bite. Insect repellents, protective clothing, and mosquito netting may be advisable in many parts of the world.

Poisonous snakes are hazards in many areas. They tend to be active at night and bite as a defensive reaction. As a precaution, boots may be worn when walking outdoors at night in snake-infested areas. There are antivenoms against the effects of most poisonous snakes, but these may not be readily available in all areas. Bites from scorpions may be painful but seldom are dangerous except possibly in infants. In general, exposure to bites can be avoided by sleeping under mosquito nets and by shaking clothing and shoes before putting them on, particularly in the morning. Snakes and scorpions tend to rest in shoes and clothing.

CRUISE SHIP SANITATION

CDC provides the cruise ship industry with technical consultation and sanitation standards designed to achieve levels of sanitation that will minimize the potential for gastrointestinal disease outbreaks on international passenger vessels calling at U.S. ports. The standards are based on the WHO "Guide to Ship Sanitation" and CDC recommendations on vessel sanitation. International vessels carrying 13 or more passengers are required by regulation to report the occurrence of diarrheal illness on board 24 hours prior to arrival at a U.S. port. CDC investigates gastrointestinal disease outbreaks on board cruise ships if and when they occur.

THE POST-TRAVEL PERIOD

Some diseases may not manifest themselves immediately. If travelers become ill after they return home, they should tell their physician where they have traveled.

Most persons who acquire viral, bacterial, or parasitic infections abroad become ill within 6 weeks after returning from international travel. However, some diseases may not manifest themselves immediately, e.g., malaria may not cause symptoms for as long as 6 months to a year after the traveler returns to the United States. It is recommended that a traveler always advise a physician of the countries visited within the 12 months preceding onset of illness. Knowledge of such travel and the possibility the patient may be ill with a disease the physician rarely encounters will help the physician arrive at a correct diagnosis.

IMPORTATION OR EXPORTATION OF HUMAN REMAINS

There are no federal restrictions on the importation of human remains if death does not result from any of the following communicable diseases: cholera or suspected cholera, diphtheria, infectious tuberculosis, plague, suspected smallpox, yellow fever, suspected viral hemorrhagic fevers (Lassa, Marburg, Ebola, Congo-Crimean and others not yet isolated or named). If a person dies as the result of one of these diseases, the remains shall not be brought into a port under the control of the United States unless properly embalmed and placed in a hermetically sealed casket, or cremated. The remains must be accompanied by a death certificate translated into English to identify the remains and state the cause of death. The local mortician will comply with the regulations of the local health department and the States concerning interstate or intrastate shipment.

The United States has no exportation restrictions; however, the requirements of the country of destination must be met. This information may be obtained from the embassy or local consulate general.

REENTRY OR IMPORTATION OF PETS

It is important that pets in international travel be free of communicable diseases because many animals carry infections that are dangerous to man.

The U.S. Public Health Service requires that certain imported pets (dogs, cats, and turtles) be examined at the port of entry for evidence of disease that can be passed on to humans. The following requirements also must be met:

DOGS— Dogs, except those coming from a rabies-free area (Table 14) and puppies less than 3 months of age, must be accompanied by a valid rabies certificate that includes the following information:

1. Identification of dog as to breed, sex, age, color, markings, or other identifying information.
2. Date vaccinated (must be at least 30 days before the date of arrival of the dog).

3. Date vaccination expires. If expiration date is not shown, the date of vaccination shall be not more than 12 months before the date of arrival.
4. Signature of a licensed veterinarian.

If the dog is unvaccinated or if the date of vaccination is less than 30 days before the date of arrival, the dog may be admitted but must be kept in confinement in transit and be vaccinated within 4 days after arrival at its destination but no more than 10 days after arrival at the port of entry. Also, the dog must be kept in confinement by the owner for at least 30 days after the date of vaccination.

Puppies less than 3 months of age may be admitted but must be kept in confinement in transit and at destination by the owner until vaccinated at 3 months of age and for at least 30 days after the date vaccinated.

CATS—Rabies vaccination is not required for cats.

TURTLES—A person may import live turtles with a carapace length of less than 4 inches and viable turtle eggs, provided that for each arrival the person imports no more than 1 lot containing 6 or fewer live turtles or 6 or fewer viable turtle eggs, or any combination totaling no more than 6.

The Public Health Service has no restrictions on the importation of live turtles with a carapace length of more than 4 inches.

MONKEYS AND OTHER NONHUMAN PRIMATES—Pet monkeys MAY NOT be imported. Live monkeys and other nonhuman primates may be imported into the United States only by importers registered with CDC and only for scientific, educational, or exhibition purposes.

If additional information is needed concerning the importation of these animals, inquiries should be addressed to the Centers for Disease Control, Attention: Center for Prevention Services, Division of Quarantine, Atlanta, Georgia 30333.

Persons planning to import horses, ruminants, swine, poultry, birds, and dogs used in handling livestock should contact the U.S. Department of Agriculture.

Persons planning to import fish, snakes, spiders, wild birds, rabbits, bears, wild members of the cat family, and other wild animals should contact the U.S. Department of the Interior.

Travelers planning to take a pet to a foreign country should be advised that the entry requirements of the country of destination also must be met. This information may be obtained by writing directly to that country, to the country's embassy in Washington, D.C., or to the consulate nearest the traveler's home.

DEFINITIONS

Active immunization—The production of immunity in response to the administration of a vaccine or a toxoid.

Antigen(s)—Substances inducing the formation of an immune response.

Antitoxin—A solution of antibodies derived from the serum of animals immunized with specific antigens used to achieve passive immunity or to effect a treatment.

"Blue Sheet"—Summary of Health Information for International Travel, published biweekly by CDC.

CDC—Centers for Disease Control.

Direct transit area—A special area established in an airport, approved and supervised directly by the health administration concerned, for segregating passengers and crews breaking their air voyage without leaving the airport.

Diseases subject to International Health Regulations—Cholera, yellow fever, and plague.

Endemic—The usual frequency of occurrence of a disease, including possible seasonal variations, in a human population.

Enzootic—The usual frequency of occurrence of a disease, including possible seasonal variations, in an animal population.

Epidemic—More than the expected number of cases of disease which would occur in a community or region during a given time period.

Epizootic—The occurrence of a disease in a defined animal population at a higher than expected rate.

Immune globulin (IG)—A sterile solution containing antibody from human blood. It is primarily indicated for routine maintenance of certain immunodeficient persons, and for passive immunization against measles and hepatitis A.

Immunization—The process of inducing or providing immunity artificially by administering an immunobiologic. Immunization can be active or passive.

Imported case—A person who acquired an infection outside of a specified area.

Infected area—An area which harbors a particular agent of infection and which because of population characteristics, density, and mobility, and/or vector and animal reservoir potential could support transmission of disease(s) identified there. It is defined on epidemiologic principles by the health administration reporting the disease and need not correspond to administrative boundaries.

International Certificates of Vaccination—The official certificates used to document the vaccinations a traveler has received, when and where received, and who administered them.

Isolation—The separation of a person or group of persons from others (except the health staff on duty) to prevent the spread of infection.

Motion sickness—A functional disorder thought to be brought on by repetitive motion and characterized by nausea or vomiting.

MMWR—Morbidity and Mortality Weekly Report, published by CDC.

Parasitic disease—A disease caused by an organism that lives in or on another organism.

Passive immunization—The provision of temporary immunity by the administration of preformed antitoxin or antibodies.

Quarantine—That state or condition during which measures are applied by a health administration to a ship, an aircraft, a train, road vehicle, other means of transport or container, or individuals to prevent the spread of disease from the object of quarantine to reservoirs, vectors of disease, or other individuals.

Quarantinable diseases—Cholera, yellow fever, and plague.

Recommended vaccination—Vaccination not required by International Health Regulations but suggested for travelers visiting or living in certain countries.

Required vaccination—Vaccination the traveler must have for entry into or exit from a country. The traveler must present a validated International Certificate of Vaccination which documents the vaccination(s) received.

Specific immune globulin—Special preparations obtained from donor pools preselected for a high antibody content against a specific disease.

Toxoid—A modified bacterial toxin that has been rendered nontoxic but that retains the ability to stimulate the formation of antitoxin.

Travelers' diarrhea—A syndrome characterized by a twofold or greater increase in the frequency of unformed bowel movements. Commonly associated symptoms include abdominal cramps, nausea, bloating, urgency, fever, and malaise. Episodes of traveler' diarrhea usually begin abruptly, occur during travel or soon after returning home, and are generally self-limited.

Uniform Stamp—An official validation stamp which may be issued in the United States by the State health departments to local health departments and physicians licensed by the State.

Vaccination—The administration of any vaccine or toxoid without regard to whether the recipient is successfully made immune.

Vaccine—A suspension of attentuated live or killed microorganisms, or fractions thereof administered to induce immunity and thereby prevent infectious disease.

Validation—Application of an official stamp or seal to the International Certificate of Vaccination by the health department or other appropriate agency. Approved validation stamps and seals in the United States are: (1) The Department of Defense Stamp, (2) the Department of State Seal, (3) the Public Health Service Seal, (4) the National Aeronautics and Space Administration Stamp, and (5) the Uniform Stamp.

Valid certificate—An International Certificate of Vaccination that has been fully completed, signed, and validated with an official stamp or seal. A model of a correctly completed certificate appears on p. 11.

WHO—World Health Organization.

Yellow Fever Vaccination Center—A center designated under the authority of the health administration of a country to administer yellow fever vaccine.

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/5T776368608

*U.S. GOVERNMENT PRINTING OFFICE: 1986-631-008:45601 CDC